

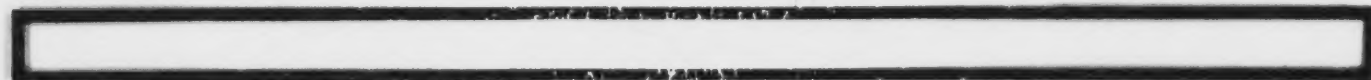
TSP Source Inventory Around Monitoring
Sites in Selected Urban Areas, Kansas City

PEDCo-Environmental, Inc.
Kansas City, MO

Prepared for

Environmental Protection Agency
Research Triangle Park, NC

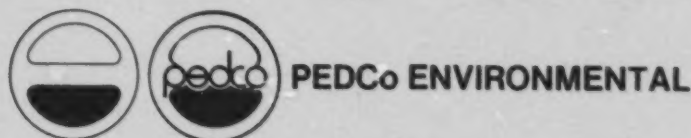
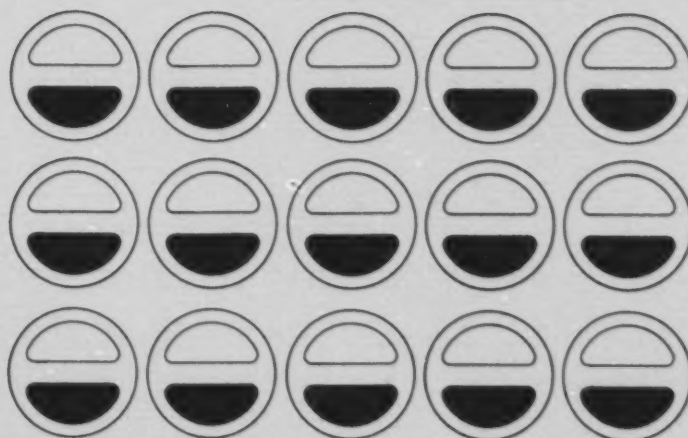
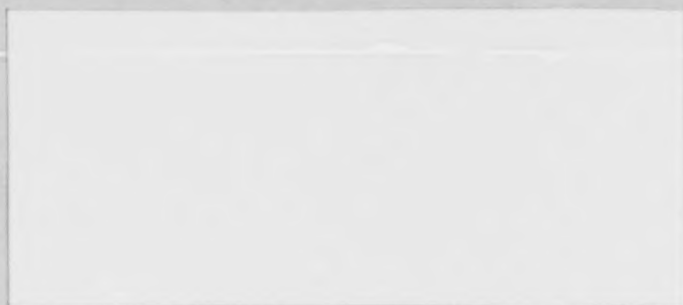
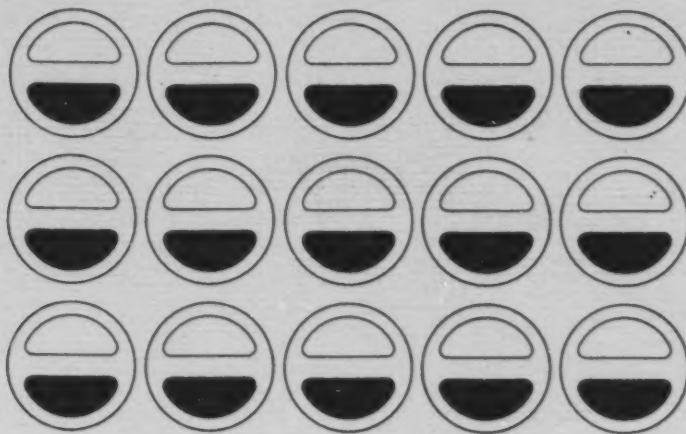
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16. ABSTRACT ✓ EPA is developing an empirical model to relate ambient air quality to particulate emissions and land use in the surrounding area. This receptor-oriented model will be used for evaluating the effect of particulate control measures on concentrations at individual sites in a sampling network or for predicting air quality at a location where there is no sampler. PEDCo Environmental is collecting most of the detailed data base for this study and providing it to EPA in the form of a series of reports, one for each of the five cities in which sites are to be surveyed: Kansas City, Portland, St. Louis, Birmingham, and Philadelphia. Each of the reports are confined to data presentation. The present report summarizes information for sites in the Kansas City area. Kansas City was selected for inclusion in the study because 32 microinventories around sampling sites had been completed and emission data were already available from a previous study. These data have been updated and some information that was not included earlier, such as land use, has been added. Also, the areas surrounding sampler sites were divided into sectors so that emissions could be reported with respect to distance and direction from the samplers. The 32 high volume sampling sites in the Kansas City Air Quality Control Region (AQCR) have a wide distribution of exposures, ranging from heavy industry to background.		
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TSP SOURCE INVENTORY AROUND
MONITORING SITES IN
SELECTED URBAN AREAS,
KANSAS CITY

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Contract No. 68-02-2603
Task No. 15

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Prepared for
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1. INTRODUCTION

EPA is developing an empirical model to relate ambient air quality to particulate emissions and land use in the surrounding area. This receptor-oriented model will be used for evaluating the effect of particulate control measures on concentrations at individual sites in a sampling network or for predicting air quality at a location where there is no sampler.

Several studies have indicated that there is a statistically significant relationship between particulate concentrations measured at a high volume sampler and the emission density within a limited radius surrounding that site.^{1,2,3,4,5} It is EPA's intention to improve the correlation observed for this basic source/receptor relationship by accounting for some or all of the following factors in the empirical model:

- ° distance to sources
- ° direction of sources
- ° differential impact of point and area source emissions
- ° sampler and source heights
- ° surrounding land use

By using weighting factors for different emissions in the area around the sampler, the model will build on the basic relationship and attempt to increase its accuracy.

The model will utilize data obtained from a technique referred to as a microinventory. The original microinventory procedure, as outlined in a 1974 report,¹ consisted of an

inventory of particulate sources within a 1.5 mile radius of a high volume sampler and the calculation of an average emission density (in $\text{ton}/\text{mi}^2/\text{yr}$) for the entire area. Subsequent reports have reduced the area to a one mile radius but left the other procedures essentially the same.^{2,3} Most of the improvements in the technique in these reports have occurred as a result of fugitive dust emission factor development.

The next refinement of the inventory technique was based on an observed relationship between particulate concentrations and average daily traffic (ADT) on nearby streets.⁵ Available traffic and TSP data for two cities indicated that ambient concentrations were directly related to ADT on the nearest street and inversely related to the slant distance (hypotenuse of height and horizontal distance) from the sampler to that street. This relationship has been incorporated into the microinventory by giving special consideration to streets and other localized sources (within 200 ft of the sampler) during the field survey.

The concept of decreasing impact with distance has been expanded in recent particulate analyses to include classification of point and area sources into different ranges of distance from the sampler.^{6,7} The sources were also classified by general direction from the sampler. Emissions from all area sources within 1/4 mile of the monitor were tabulated. Separate tabulations were made for sources within a 1/4 to 1/2 mile radius and a 1/2 to 1 mile radius, with each of these two radii being divided into quadrants. Thus, a total of nine sectors within the 1 mile radius were considered separately in the area source emission inventory.

In these same particulate analyses, point source emissions within a five mile radius were tabulated with respect to distance and direction from the monitor. The larger radius was specified for point source emissions because of

their greater dispersion potential than lower level emissions from area sources. It is relatively simple to calculate or scale from a map the distance from each point source to the monitor. Likewise, the compass direction from the monitor to the source can be easily determined.

An additional refinement of microinventory procedures has recently been proposed, but not yet fully evaluated. Land use in the area surrounding the sampler is thought to be related to the concentration measured at the sampler. A recent study reported the predominant land use in each of the nine sectors in the area source inventory area.⁷ A land use determination was also made for the area from 1 to 3 miles from the sampler and the 1/4 mile radius sector was further divided into four quadrants for land use classification.

All of the refinements described above have been incorporated in the microinventories for developing the empirical model. This will permit variables such as distance, direction, point vs. area source, height and land use to be included in the resulting model if they are shown to improve its predictive capabilities. It has been estimated that this detailed emission data and land use information is needed for approximately 100 sites in order to adequately consider all these variables.

PEDCo Environmental is collecting most of this detailed data base and providing it to EPA in the form of a series of reports, one for each of the five cities in which sites are to be surveyed:

Kansas City	- 32 sites
Portland	- 10 sites
St Louis	- 11 sites
Birmingham	- 14 sites
Philadelphia	- 10 sites

Another contractor, GCA Corporation, is providing information for 12 sites in the Boston area. In addition, Rockwell International is providing corresponding data for 12 sites in their RAMS sampling network in St. Louis. Altogether, this will provide EPA with data from 101 sites.

Each of PEDCo's reports follow the same format as this one. The reports are confined almost entirely to data presentation; data analysis and model development will be performed by EPA. All of the data in this report are presented in a format appropriate for EPA's use in their analysis.

The present report summarizes information for sites in the Kansas City area. Kansas City was selected for inclusion in the study because 32 microinventories around sampling sites had been completed and emission data were already available from a previous study.² These data have been updated and some information that was not collected earlier, such as land use, has been added. Also, the areas surrounding sampler sites were divided into sectors so that emissions could be reported with respect to distance and direction from the samplers.

The 32 high volume sampling sites in the Kansas City Air Quality Control Region (AQCR) have a wide distribution of exposures ranging from heavy industry to background. This distribution is readily apparent from their locations, as shown in Figure 1-1. The data collected for the 32 sites are presented in Chapter 3. The general methodology for performing a microinventory and some specific information about particulate emissions in Kansas City are presented in Chapter 2.



Figure 1-1. Locations of high volume samplers in the Kansas City AQCR.

Legend

Site no.	Site location
1.	115 East 69 Highway, Claycomo, Missouri
2.	4836 North Brighton, North Kansas City, Missouri
3.	2 Northeast 32nd Street, North Kansas City, Missouri
4.	68 Vernon Street, North Kansas City, Missouri
5.	5130 Deramus, Kansas City, Missouri
6.	101 Lou Holland, North Kansas City, Missouri
7.	405 Missouri Avenue, Kansas City, Missouri
8.	6600 Independence Avenue, Kansas City, Missouri
9.	2408 North Liberty, Independence, Missouri
10.	213 South Main, Independence, Missouri
11.	6402 East 37th, Kansas City, Missouri
12.	5100 Troost, Kansas City, Missouri
13.	9900 East 63rd, Raytown, Missouri
14.	9445 Holmes, Kansas City, Missouri
15.*	709 Main Street, Grandview, Missouri
16.*	Belt and Frederick Streets, St. Joseph, Missouri
17.	Eighth and Edmond Streets, St. Joseph, Missouri
18.*	Waterworks, Platte City, Missouri
19.	11500 North 71 Highway, Kansas City, Missouri
20.	3105 Fairfax, Kansas City, Kansas
21.	2615 North 27th Kansas City, Kansas
22.	619 Ann Avenue, Kansas City, Kansas
23.	Baltimore and Miami, Kansas City, Kansas
24.	1312 South 55th, Kansas City, Kansas
25.	9224 Haskins, Lenexa, Kansas
26.	10100 England, Overland Park, Kansas
27.	100 Park Street, Olathe, Kansas
28.*	422 Walnut, Leavenworth, Kansas
29.*	321 Delaware, Tonganoxie, Kansas
30.*	Brauer School, Wyandotte County, Kansas
31.*	226 West Nelsen, Edgerton, Kansas
32.	1517 Locust Street, Kansas City, Missouri

* Site location is off the map.

2. METHODOLOGY

MICROINVENTORY PROCEDURES

The microinventory technique described herein was developed over the past four years as part of particulate analyses in several regional areas. The procedures followed are not necessarily technically superior to alternative methods that might be used. However, they have evolved as a result of this past experience and are recommended for succeeding inventories, primarily to maintain consistency in data collection and to minimize the time required in the field.

The survey procedure employed in Kansas City was to ground survey, via automobile, the sampler stations and all probable sources of emissions within a one mile radius of each sampling site. This method enabled the survey team to make the best observation of overall site exposure and to identify the sources with primary impact on the samplers. The one mile radius around each sampler was specified because that is approximately the range to which theoretical treatments (dispersion modeling) show that low level sources will have a significant impact.

Sources of fugitive dust and conventional point and area sources were located on maps during the ground survey and labeled with pertinent data, such as size and boundaries, observed activity and operational characteristics, and estimated emission rates. Two observers independently estimated and agreed upon parameters observed at each site to increase accuracy and completeness.

Preparatory Work

Materials needed to perform the microinventories were collected prior to undertaking the field surveys. Point source, area source, and air quality data were obtained from state and local air pollution control agencies. Traffic count maps and land use maps were obtained from Mid-America Regional Council, the regional planning agency.

Three other types of maps were also utilized during the Kansas City microinventories. USGS 7-1/2 minute quadrangle maps were used to locate sampler sites and point sources by UTM coordinates. They were also a convenient size and scale (1" = 2000') for covering the impact area--one mile radius for area sources and a five mile radius for point sources. Aerial photo maps (scale 1" = 400') were practical for marking area source locations and for estimating sizes of land areas. A city street map was necessary for locating streets and planning a route through the area to be surveyed.

A one mile radius was drawn on the USGS map for each site; the names of major streets were also noted thereon. Copies of each of these maps were made for use in the field. A separate sketch of the 1/4 mile radius area was drawn to scale (1" = 400') to provide even greater detail for the area close to the sampler. An alternative to the 1/4 mile radius sketch would have been to mark information directly on the aerial photo map if these maps had been available for a larger number of the sites being surveyed.

Field Work

The actual inventory procedure followed was to begin at the sampler site and survey the 1/4 mile radius area first. Photographs of the sampler were taken; the height and placement were recorded on an auxiliary data sheet. If any physical interference was observed that could bias the air

quality readings, that information was also noted. The site code, street address, and names and distances of nearest intersecting streets were recorded next.

The field team then drove across every street within the 1/4 mile radius and noted the location of all the pertinent sources on the sketch. Closer inspections of the sources were made as necessary. All important parameters were independently estimated and then agreed upon by the two observers. For area sources, the type, dimensions, and activity rate were recorded. For point sources, the company name, source types, and estimated stack heights were noted. This information was usually recorded on an auxiliary data sheet.

The general condition of paved streets within the area was described on the 1/4 mile map by indicating whether streets were curbed or uncurbed. Surface conditions and dirty loadings were described as clean or dirty.

Finally, the predominant land uses for the four quadrants were marked on the 1/4 mile map. The land use descriptors used are described in detail in the next section.

The above steps were repeated with little modification for the rest of the one mile radius survey area. In many cases it was possible to effectively cover this area by driving across alternate streets in a crosshatch pattern, covering each quadrant completely. In this way, all intersections and sources were observed from a maximum one block distance. Locations of point and area sources were shown on copies of the USGS maps or, where available, on aerial photo maps; descriptions of the sources were recorded on the data sheets. Land use was determined both from the ground survey and from information obtained later from land use maps.

Topography - The topography of each survey area was briefly characterized. Since the purpose was to account for any increase in concentrations that might occur as a result of pollutant trapping or decrease due to an elevated sampler, the topography description was primarily concerned with sampler placement rather than the surrounding land area. In order to keep this element of the model as simple as possible, only four descriptors were used:

- ° Elevated receptor
- ° Valley receptor
- ° Street canyon receptor
- ° No special terrain

Measuring Distances of Sources - For purposes of determining the distance from a source to the sampler, the following rules were observed:

- | | |
|------------------------------|---|
| Within 200 ft of the monitor | - determine distance to ± 5 percent |
| From 200 ft to 1/4 mile | - scale off the aerial photo map |
| From 1/4 to 1 mile | - scale off either the aerial photo map or the USGS map |

Distances to sources within 200 ft of the monitor were recorded on the 1/4 mile map while in the field. Distances beyond 200 ft were scaled from a map and recorded on the data sheet at a later date following completion of the field work.

Defining Sources - So that all inventories were done with the same degree of detail, it was necessary to establish exactly what sources were to be included. Generally, all

fireplace and furnace stacks from residential, commercial, or institutional buildings were accounted for under the fuel combustion area source category and were not inventoried. If a stack emission appeared to involve an industrial process not included in the point source listing, the source was noted if the facility appeared to be operating at the time of the survey.

Defining what constitutes a fugitive dust source was somewhat more difficult; however, sources of fugitive dust would include at least the following activities:

excavating	handling and transporting
grading	of materials
detonation of	barren storage areas or
explosives	storage piles
earth moving	vehicle movement
construction	(reentrainment)
demolition	unpaved roads
site preparation	unpaved parking lots
sand blasting	agricultural tilling
mining	wind erosion of
quarrying	exposed surfaces
processing of sand,	feed lots
gravel, and rock	campgrounds
crushing	fairgrounds
screening	playgrounds
drying	athletic fields

Unpaved driveways or unpaved road shoulders were not included unless they were common to all the blocks in a particular segment. However, the presence of these sources often resulted in increased street dirt loadings, and those streets were noted to be dirty.

It is important to note that this report presents updated and supplemental data, but that most of the data was taken from an earlier published report. The field survey data are for 1975, except within the 1/4 mile radius which was updated to 1978. Most point source data were 1975, although power plant emissions were reworked and now represent 1977. The other reports prepared for the remaining

four urban areas will have more uniform time periods for their emission data, probably 1977 for point and area source emissions and early 1978 for fugitive dust emissions.

A significant factor in determining which temporary sources to consider is the time period for which the source is expected to be actual. For example, a construction site should be included as a fugitive dust source only if the air quality data are for the period of time the site is active.

A checklist for the procedures discussed above is presented in Table 2-1. This list should facilitate both the planning and the execution of the field surveys so that consistent data collection is achieved for succeeding microinventories.

LAND USE DETERMINATION

Area sources were identified within one mile of each sampling site, but an attempt was made to determine the major land uses within a three mile radius of the site. The rationale for this extension was that the relative impact of land use has not yet been established, so it is reasonable to collect slightly more data than may ultimately be necessary for analysis. The 16 segments within the three mile radius are shown in Figure 2-1. The predominant land use in each segment was categorized based on descriptors listed in Table 2-2. Again, since the input requirements for land use data in the empirical model are uncertain, these descriptors may be modified at a later date.

An initial land use description was obtained for each segment from a land use map. This description was further refined from observations made during the ground survey and from USGS maps. In a few cases, the most appropriate land use designation may be the use which affects air quality most rather than the majority land use. This designation may change as the land area located in the sectors increases.

Table 2-1. CHECKLIST OF STEPS IN MICROINVENTORY

Presurvey and preparatory work

1. Identify sampling sites to be inventoried: record SAROAD code and street address
2. Determine distances to localized sources within 200 feet and sampler height (obtained during site tour)
3. Note possible interferences or biases (obtained during site tour)
4. Take photographs of site and surrounding area (obtained during site tour)
5. Obtain U.S. Geological Survey maps of the area (from either USGS or a local engineering supply store)
6. Obtain land use maps (from local Council of Governments)
7. Obtain traffic data (from local COG, or city or state transportation agency)
8. Obtain recent air quality data (local air pollution control agency)
9. Obtain gridded inventory of area source emissions (local agency)
10. Obtain point source inventory including annual particulate emissions and UTM coordinates (local agency)
11. Obtain aerial photographs (from local COG or city engineering department)
12. Prepare maps for field survey (USGS maps and 1/4 mile sketches)

Field work

1. Describe topography around sampler
2. Survey 1/4 mile area: locate all sources on 1/4 mile sketch, describe on data sheet
3. Note condition of streets
4. Survey remainder of one mile radius area: locate sources on copy of USGS map, describe on same data sheet as above
5. Determine predominant land use by sector

Calculations

1. Allocate area source emissions (from agency inventory) to one mile radius area and to subareas
2. Calculate emissions for discrete fugitive dust sources; assign to appropriate sectors
3. Calculate vehicle-related emissions by sector
4. Prepare table of point source data by increasing distance from site
5. Compare listing with point sources identified in field; add to list any sources missed
6. Add small point sources (less than 25 ton/yr) as an area source category
7. Make final decision on land use description for each sector

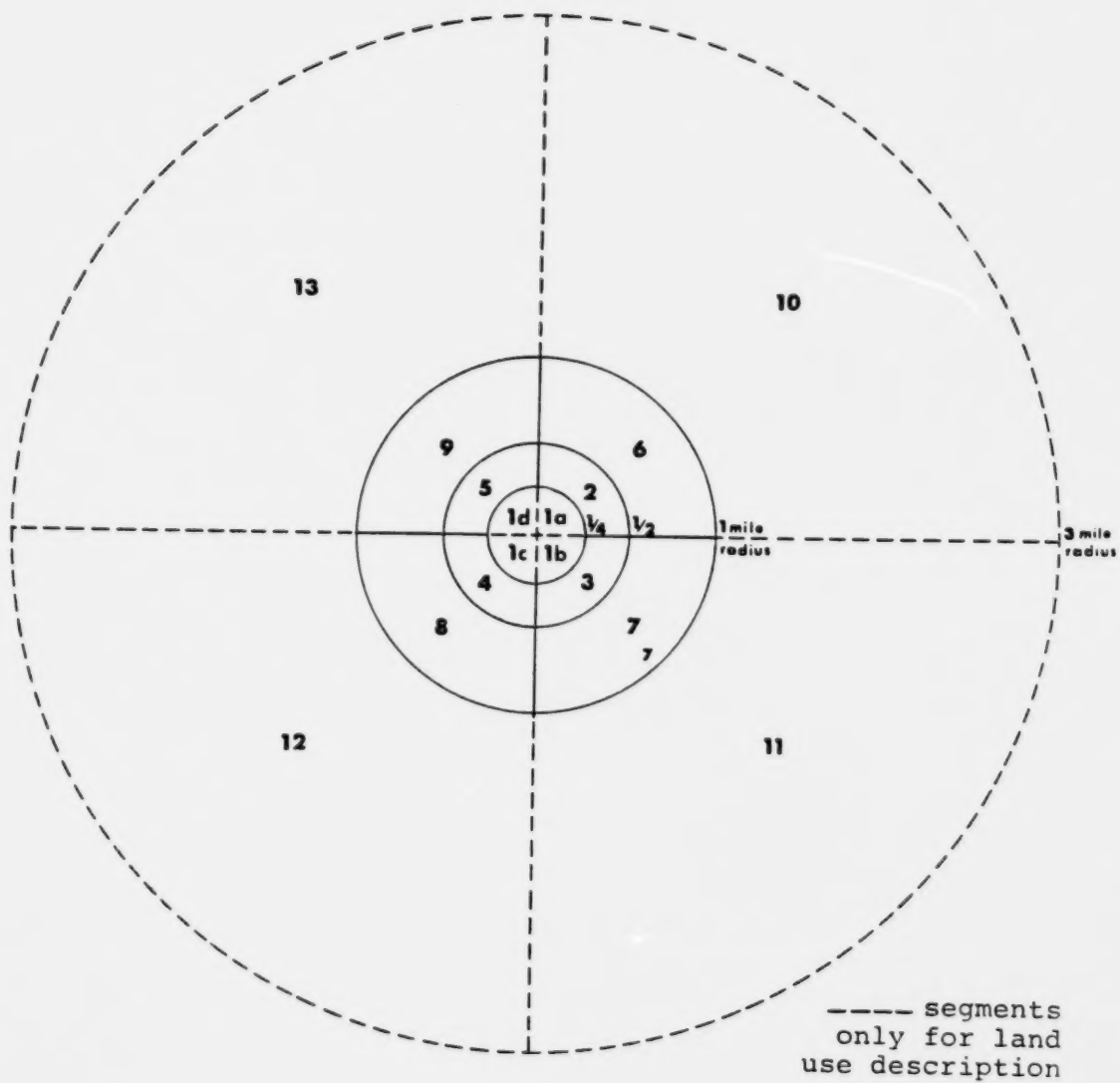


Figure 2-1. Land use and area source sectors used for the survey areas.

Table 2-2. LAND USE DESCRIPTORS

Descriptor	Characteristics
Undeveloped	No significant activity; includes parks, pasture land, lakes, rivers and forests
Agriculture	Land under cultivation at some time during the year
Light residential	Four or less dwelling units/acre
Dense residential	Greater than four dwelling units/acre, includes apartments
Suburban commercial	Retail businesses in strip development or shopping centers
Central commercial	Central business district
Light industry	Metal fabrication, warehousing, trucking, etc., includes few point sources
General industry	Controlled industrial processes includes majority of point sources
Heavy industry	Steel mills, foundries, coking, etc.
Airport	Municipal airport

For example, one or more point sources located in sector 1a would be sufficient to classify this sector as general industry. However, in sector 13 more than nine point sources (>25 tons) and a large percentage of industrial land area (>30 percent) would be required for a general industry designation. A similar rationale was utilized to choose the most appropriate land use for sectors in which land use was not clearly defined. In summary, the land use descriptor chosen for each sector was based on available land use and point source data, USGS maps, and field surveys.

COLLECTION OF POINT SOURCE DATA

During the ground survey, an attempt was made to locate every potential particulate point source. Annual particulate emissions from those industrial sources identified were estimated either from the point source listing or an engineering knowledge of the processes involved. Further, any source listed in the point source file and not identified in the survey was located using UTM coordinates and street addresses.

A table of point sources within five miles of the monitor was compiled for each of the sampler sites. Only those sources with estimated annual particulate emissions of 25 ton/yr or more were considered to be point sources. Smaller sources listed in the point source file were only considered if they were located within one mile of a sampler. The emissions from these sources were combined with either the industrial process or the industrial fuel combustion area source categories. The complete list of greater than 25 ton/yr point sources in Kansas City is included in Appendix A.

CALCULATION OF AREA SOURCE EMISSIONS

As discussed previously, an area within a one mile radius was inventoried for each of the 32 sites. This area was divided into nine sectors as shown in Figure 2-1. Based on data obtained from the survey, estimates were made of fugitive dust emissions in each sector. All identified fugitive dust sources within the survey area were recorded on the data sheet with estimates of size, location, and activity. Appropriate emission factors were then applied to each source to calculate estimated annual emissions. These emission factors are discussed in Appendix B. The individual emission factors used for each source category are listed in Table 2-3.

Conventional area source emissions not accounted for in the survey were added in order to determine total area source particulate emissions by sector. The categories of conventional area sources considered included emissions from fuel combustion, incinerators, locomotives, aircraft, and motor vehicle exhaust. Emissions from these sources were obtained from the earlier Kansas City report, in which emissions were summarized for a one mile radius area around each sampler.² From these data, it was possible to apportion emissions to the nine sectors.

The area source fuel combustion emissions were apportioned to the nine sectors on the basis of land area: sector 1, 6.0 percent; sectors 2-5, 4.7 percent each; sectors 6-9, 18.8 percent each. It was not practical with the available data to determine exact emissions by sector. Although this appears to negate the effect of sectoring in Kansas City, the conventional area source emissions are generally much less than those from fugitive dust or vehicle-related sources.

Emissions from incinerators were apportioned by distributing individual sources into appropriate sectors.

Table 2-3. EMISSION FACTORS FOR MICROINVENTORIES

Source category	Emission factor	Units
Railroad yards	0.1	ton/acre/yr
Reentrained dust		
clean paved streets	3.4	gm/VMT
commercial streets	14.8	gm/VMT
exhaust	0.6	gm/VMT
Unpaved roads	3.0	lb/VMT
Cleared or exposed areas	0.06	ton/acre/yr
Construction	0.33	ton/acre/mo
Agriculture	0.03	ton/acre/yr
Aggregate storage	2.1	ton/acre/yr
Unpaved parking lots	1.5	lb/VMT
Unpaved storage areas	0.2	ton/acre/yr
Grain elevators	1.8	ton/silo/yr
Incinerators	7.0	lb/ton of refuse

Locomotive emissions were apportioned to the sectors based on area of railroad yards; aircraft emissions were distributed on the basis of airport land area.

Emissions for two other sources, auto exhaust and reentrained dust from streets, were calculated for each sector based on the vehicle miles traveled (VMT) in each sector. These VMT data were calculated from a metropolitan Kansas City traffic volume map and from file data.^{2,5} The traffic volume map had weekday traffic counts only. Therefore, annual traffic volumes were obtained by multiplying by 325 to account for lower weekend volumes.

3. SITE SUMMARIES

A six page summary was compiled for each of the 32 particulate sampler sites located in the Kansas City AQCR. These site data summaries are presented in this chapter.

The first page of the summary is a complete description of the individual site including the SAROAD code, the street address, the location and height of the monitor, the land use within a three mile radius, localized sources within 200 ft of the monitor, and air quality data--in most cases, for a four or five year period.

The sampler site locations and surrounding one mile radius survey areas are illustrated on the second page. The third page of each summary is a more detailed map showing sources within 1/4 mile of the sampler.

Two photographs illustrating the sampler, one viewed in the direction where the greatest potential for localized pollution influence existed, are presented on the fourth page of each summary.

A listing of all point sources in the Kansas City AQCR is included in this report (Appendix A). The listing is limited to those sources emitting greater than 25 ton/yr. Each source is designated by number. The fifth page of the summaries lists any of these point sources located within a five mile radius of the sampler. Those sources within one mile are also located on the map of the survey area.

Any source emitting less than 25 ton/yr and within one mile of the sampler is included under the industrial process area source category or allocated to the appropriate area source combustion category.

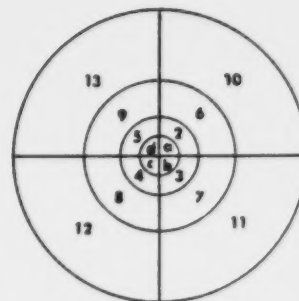
The sixth page summarizes the area sources for a one mile radius about each sampler site.

DESCRIPTION OF SITE

SAROAD code - 26 1020 001 H01

Location - 115 East 69 Highway,
Claycomo, Missouri

Monitor height - 20 ft, on roof of
fire station



Land use, by sector -

1a light residential	6 light residential
1b light residential	7 light residential
1c light residential	8 light residential
1d light residential	9 light residential
2 light residential	10 undeveloped
3 light residential	11 undeveloped
4 light residential	12 dense residential
5 undeveloped	13 undeveloped

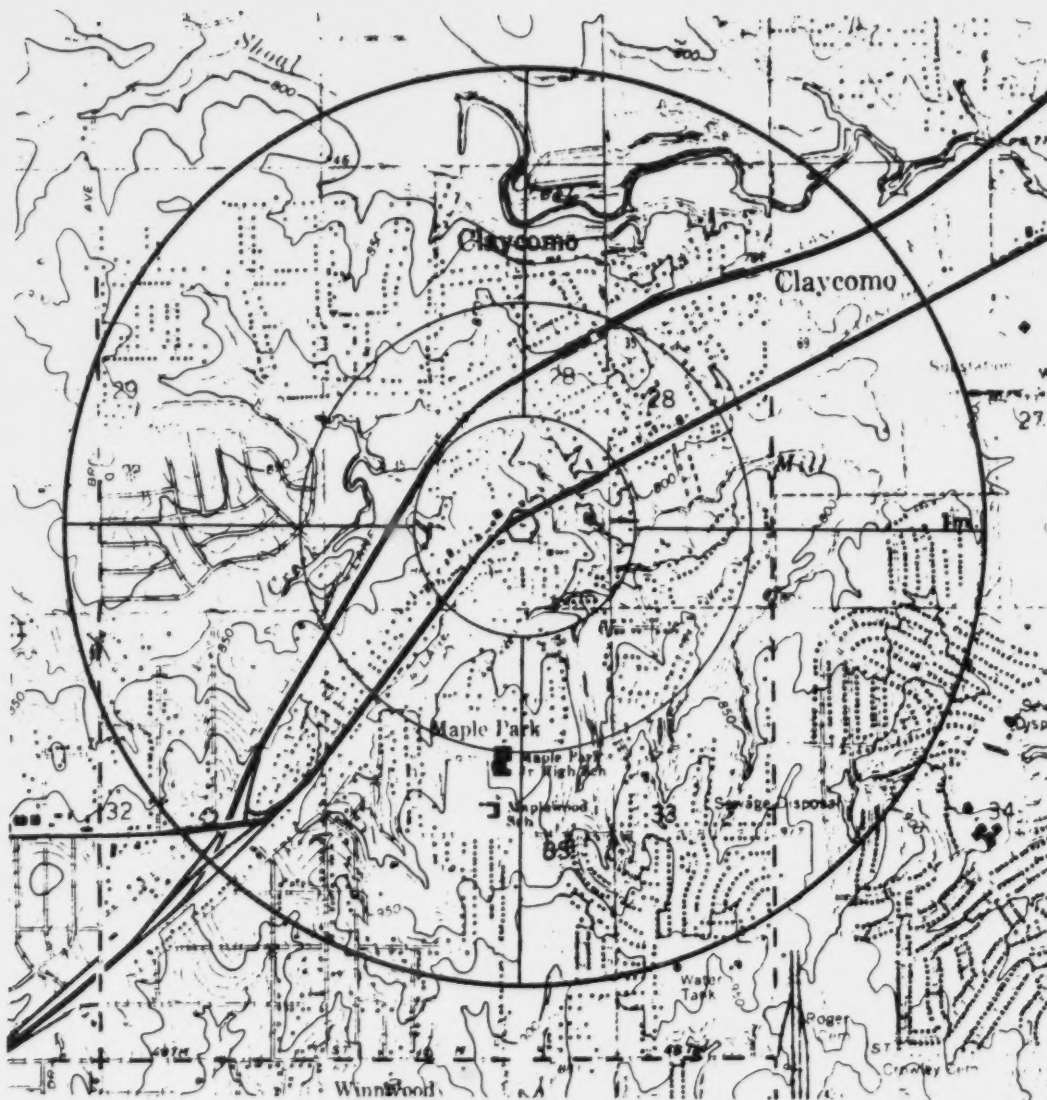
Topography - no special terrain

Localized sources, within 200 ft of monitor -

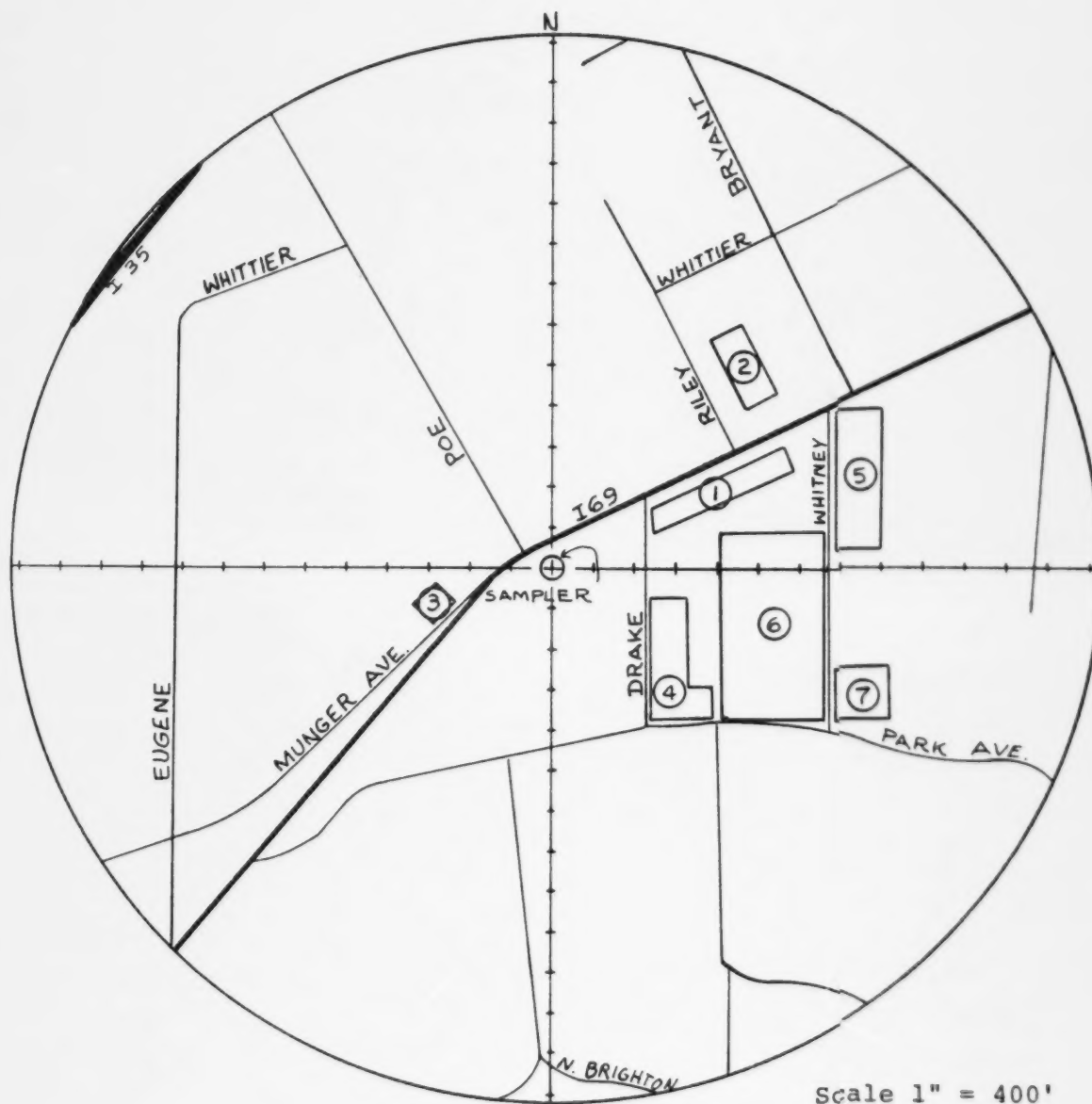
<u>Source</u>	<u>Distance</u>	<u>Description</u>
East 69 Highway	85 ft	14,820 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	73	-
1976	87	48
1975	81	40
1974	72	42
1973	81	36



One mile radius around 115 East 69 Highway site.



1. Cleared area, 0.4 acre
2. Cleared area, 0.3 acre
3. Unpaved lot, 0.1 acre, 5 cars
4. Unpaved lot, 0.7 acre, 20 cars
5. Unpaved storage area, 0.7 acre
6. Unpaved storage area, 4.6 acres
7. Unpaved parking lot, 0.5 acre, 10 cars

One-quarter mile radius around 115 East 69 Highway site.



Viewed to the southeast.



Viewed to the southwest.

Sampler at 115 East 69 Highway.

POINT SOURCE SUMMARY

Site: 115 East 69 Highway

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
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There are no point sources
within 5 mi of this site.

AREA SOURCE SUMMARY

Site: 115 East 69 Highway

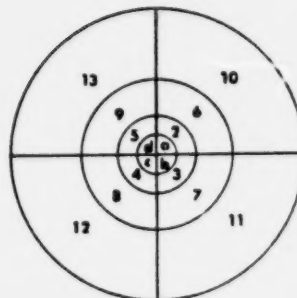
Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	4409 pop	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	1.3
Comm/Ind fuel	1608 emp	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	1.7
Incinerators											
Rail/Air											
Auto exhaust	49.5x10 ⁶ VMT	2.3	3.1	0.4	3.5	3.9	10.9	6.6	7.0	0.8	38.5
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards											
Clean streets	49.5x10 ⁶ VMT	11.1	14.9	1.9	16.7	18.5	52.0	31.5	33.4	3.7	183.7
Comm streets											
Unpaved roads											
Cleared areas	0.7 ac	neg									
Construction											
Agriculture											
Storage areas	5.3 ac	1.1									1.1
Unpaved pkg lots	1.3 ac	0.4									0.4
Recap											
		Emissions by sector, t/yr									
		1	2-5	6-9	Total						
COMBUSTION		2.5	11.7	27.3	41.5						
IND PROCESSES											
FUGITIVE DUST		12.6	52.0	120.6	185.2						
Total		15.1	63.7	147.9	226.7						

DESCRIPTION OF SITE

SAROAD code - 26 2380 010 H01

Location - 4836 North Brighton,
North Kansas City, Missouri

Monitor height - 20 ft, on roof of
fire station



Land use, by sector -

1a light residential	6 dense residential
1b light residential	7 light residential
1c light residential	8 dense residential
1d light residential	9 dense residential
2 dense residential	10 dense residential
3 dense residential	11 undeveloped (Worlds of Fun site)
4 dense residential	12 dense residential
5 dense residential	13 dense residential

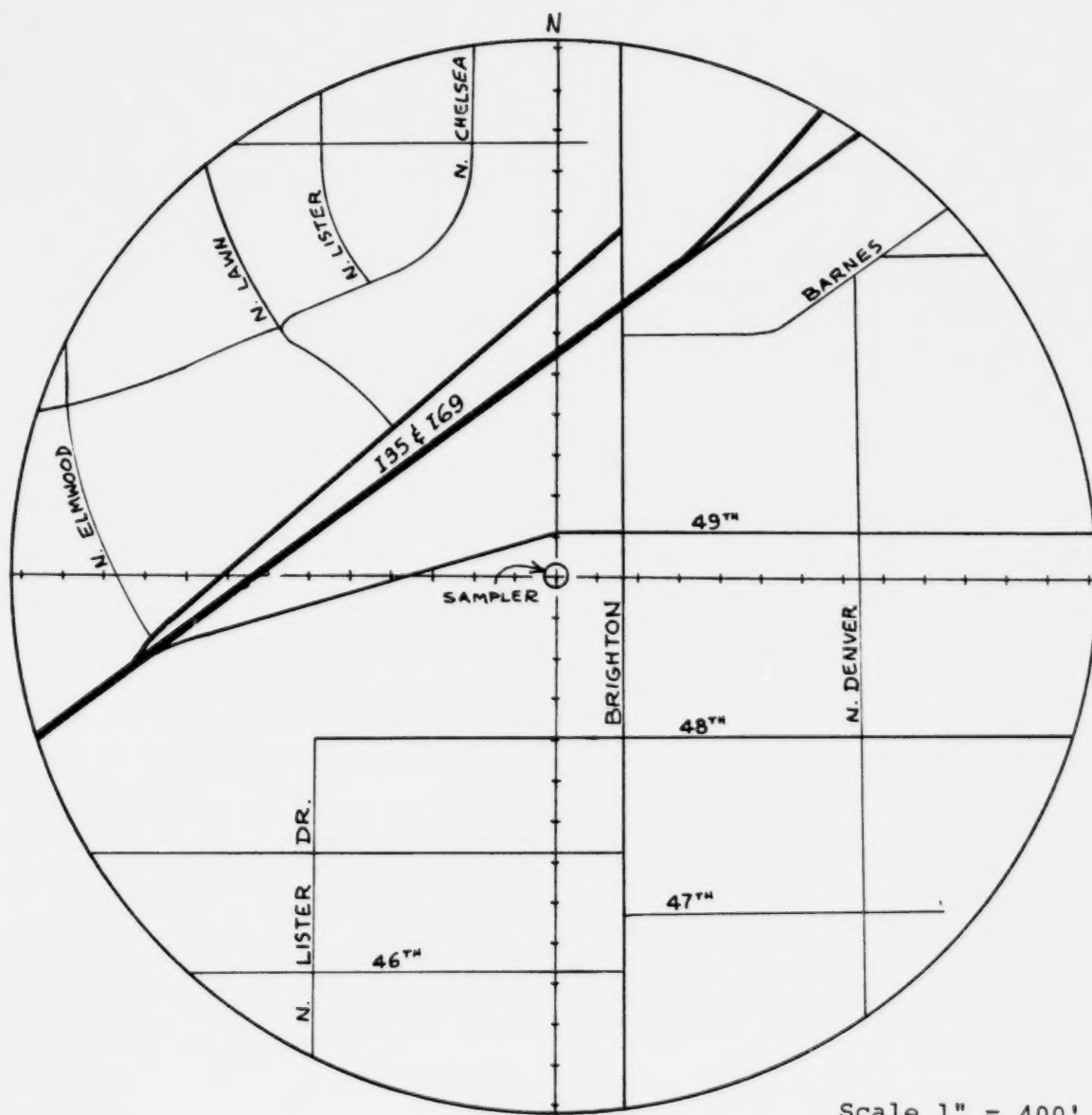
Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Brighton	160 ft	12,150 ADT, clean, curbed
Off Ramp	120 ft	6600 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	64	-
1976	76	37
1975	69	59
1974	71	52
1973	76	53



Scale 1" = 400'

One-quarter mile radius around 4836 North Brighton site.



Viewed to the south.



Viewed to the northwest.

Sampler at 4836 North Brighton.

POINT SOURCE SUMMARY

Site: 4836 North Brighton

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
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There are no point sources
within 5 mi of this site.

AREA SOURCE SUMMARY

Site: 4836 North Brighton

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	8095 pop	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4	0.4	2.1
Comm/Ind fuel	3984 emp	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	3.4
Incinerators											
Rail/Air											
Auto exhaust	34.6x10 ⁶ VMT	5.5	1.4	0.9	2.0	1.1	6.6	2.0	0.7	2.5	22.7
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards											
Clean streets	34.6x10 ⁶ VMT	31.8	8.0	5.3	11.9	6.6	38.4	11.9	3.9	14.5	132.3
Comm streets											
Unpaved roads	20 driveways	0.2									0.2
Cleared areas											
Construction											
Agriculture											
Storage areas											
Unpaved pkg lots											

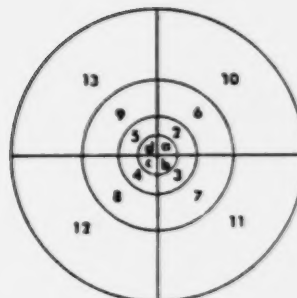
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	5.8	6.6	15.8	28.2
IND PROCESSES				
FUGITIVE DUST	32.0	31.8	68.7	132.5
Total	37.8	38.4	84.5	160.7

DESCRIPTION OF SITE

SAROAD code - 26 2380 010 H01

Location - 2 Northeast 32nd Street,
North Kansas City, Missouri

Monitor height - 15 ft, on roof of
waterworks building



Land use, by sector -

1a undeveloped	6 dense residential
1b dense residential	7 general industry
1c light industry	8 airport (Fairfax Municipal)
1d undeveloped	9 dense residential
2 dense residential	10 dense residential
3 central commercial	11 general industry
4 light industry	12 general industry
5 light industry	13 light residential

Topography - no special terrain

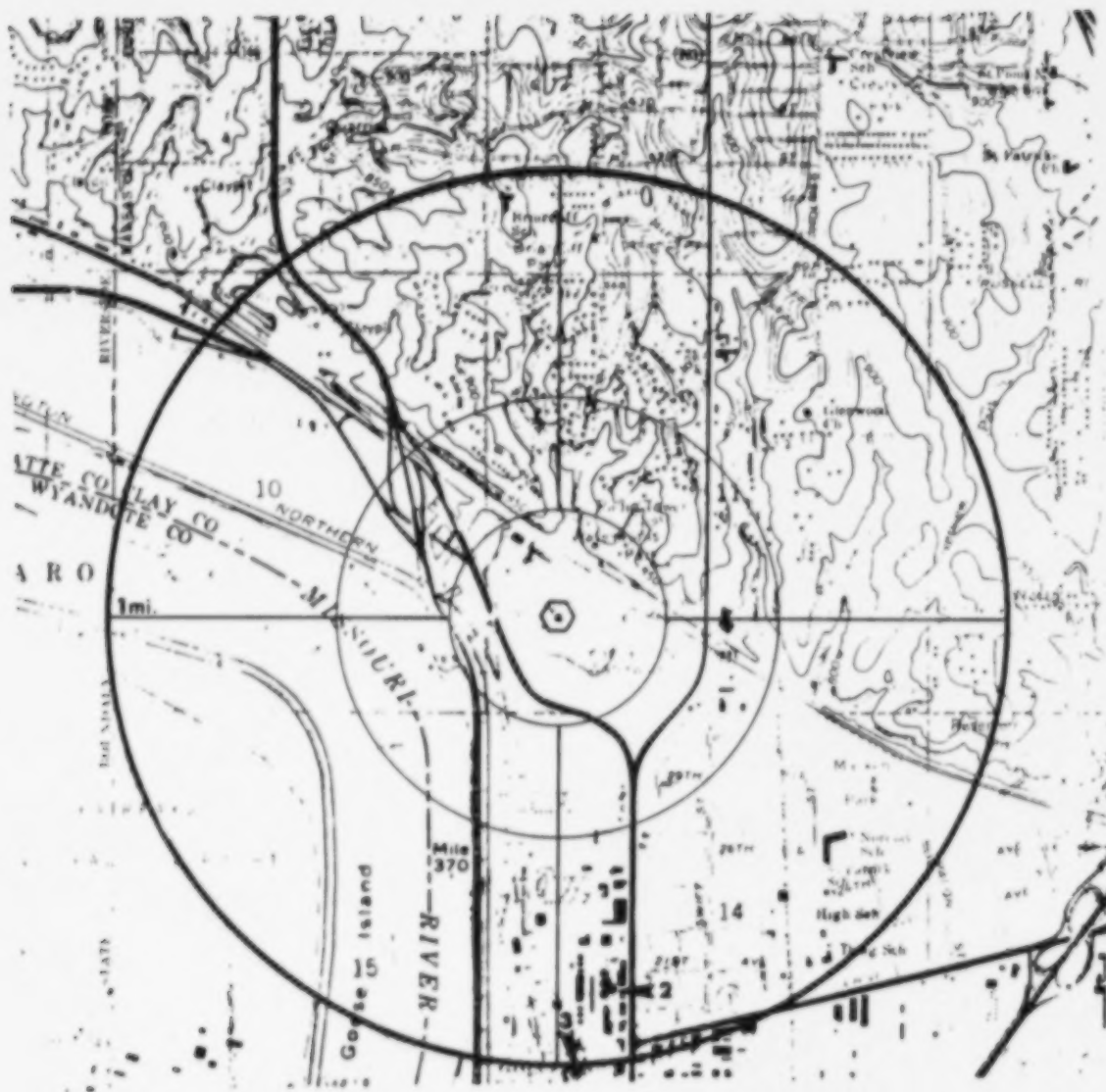
Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
None		

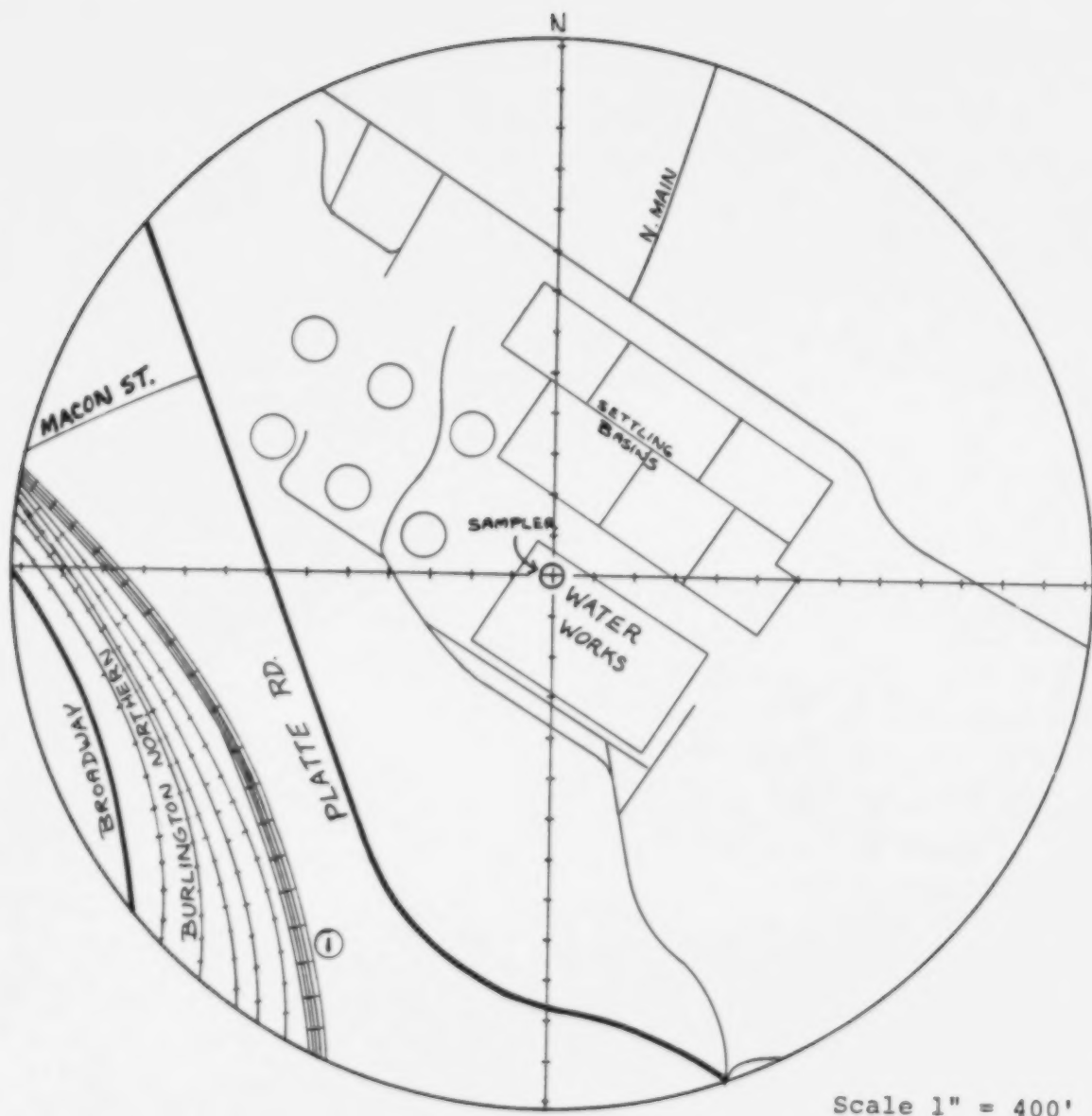
Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	74	a
1976	68	47
1975	72	46
1974	63	25
1973	70	49

^a Closed before end of 1977.



One mile radius around 2 Northeast 32nd Street site.



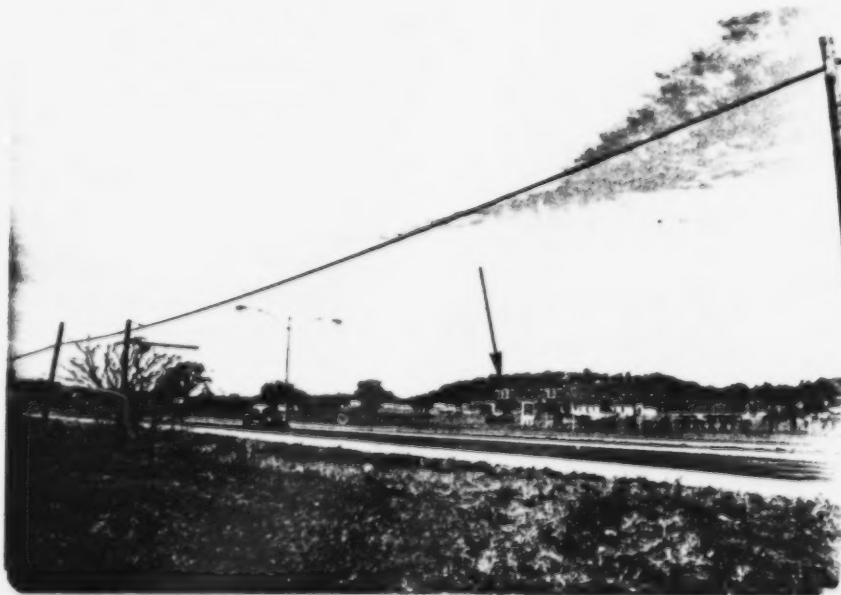
Scale 1" = 400'

1. Rail yard, 14 acres

One-quarter mile radius around 2 Northeast 32nd Street site.



Viewed to the southeast.



Viewed to the north-northwest.

Sampler at 2 Northeast 32nd Street.

POINT SOURCE SUMMARY

Site: 2 Northeast 32nd Street

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
2	757	.83	175
3	758	1.05	180
4	104	1.5	125
6	104	1.5	125
5	99	1.6	145
32	449	1.6	220
29	1,559	1.8	250
30	1,203	2.0	240
31	109	2.1	240
7	814	2.2	160
34	245	2.2	205
28	38	2.5	260
8	15	2.6	150
9	46	2.7	145
10	737	3.0	180
27	891	3.1	260
33	88	3.5	210
11	28	3.5	185
13	341	3.8	125
14	327	4.5	115
15	41	4.6	120

AREA SOURCE SUMMARY

Site: 2 Northeast 32nd Street

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	9658 pop	0.2	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	2.6
Comm/Ind fuel	4806 emp	0.2	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.8	4.2
Incinerators	1										
Rail/Air		4.4		1.3	4.0	0.6			7.4	1.3	19.0
Auto exhaust	36.2x10 ⁶ VMT	2.9	1.9	3.3	1.2	1.7	3.1	4.8	2.4	2.6	23.9
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards	57 ac	1.4		0.4	1.3	0.2			2.3	0.4	6.0
Clean streets	35.1x10 ⁶ VMT	17.1	10.6	18.4	6.6	10.6	17.1	23.7	13.2	14.5	131.8
Comm streets	1.1x10 ⁶ VMT			2.2				13.3	2.2		17.7
Unpaved roads											
Cleared areas											
Construction	9 ac			1.3	26.4						27.7
Agriculture	88.2 ac	0.1		0.1	0.1					3.0	3.3
Storage areas	6.4 ac, gravel									13.2	13.2
Unpaved pkg lots	pit										

Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	7.7	15.2	26.8	49.7
IND PROCESSES				
FUGITIVE DUST	18.6	78.2	102.9	199.7
Total	26.3	93.4	129.7	249.4

DESCRIPTION OF SITE

SAROAD code - 26 3380 004 F01

Location - 68 Vernon Street,
North Kansas City, Missouri

Monitor height - 12 ft, on top of
a trailer



Land use, by sector -

1a light residential	6 dense residential
1b undeveloped	7 light industry
1c light industry	8 light industry
1d light residential	9 light residential
2 light residential	10 dense residential
3 light industry	11 light industry
4 light industry	12 general industry
5 dense residential	13 dense residential

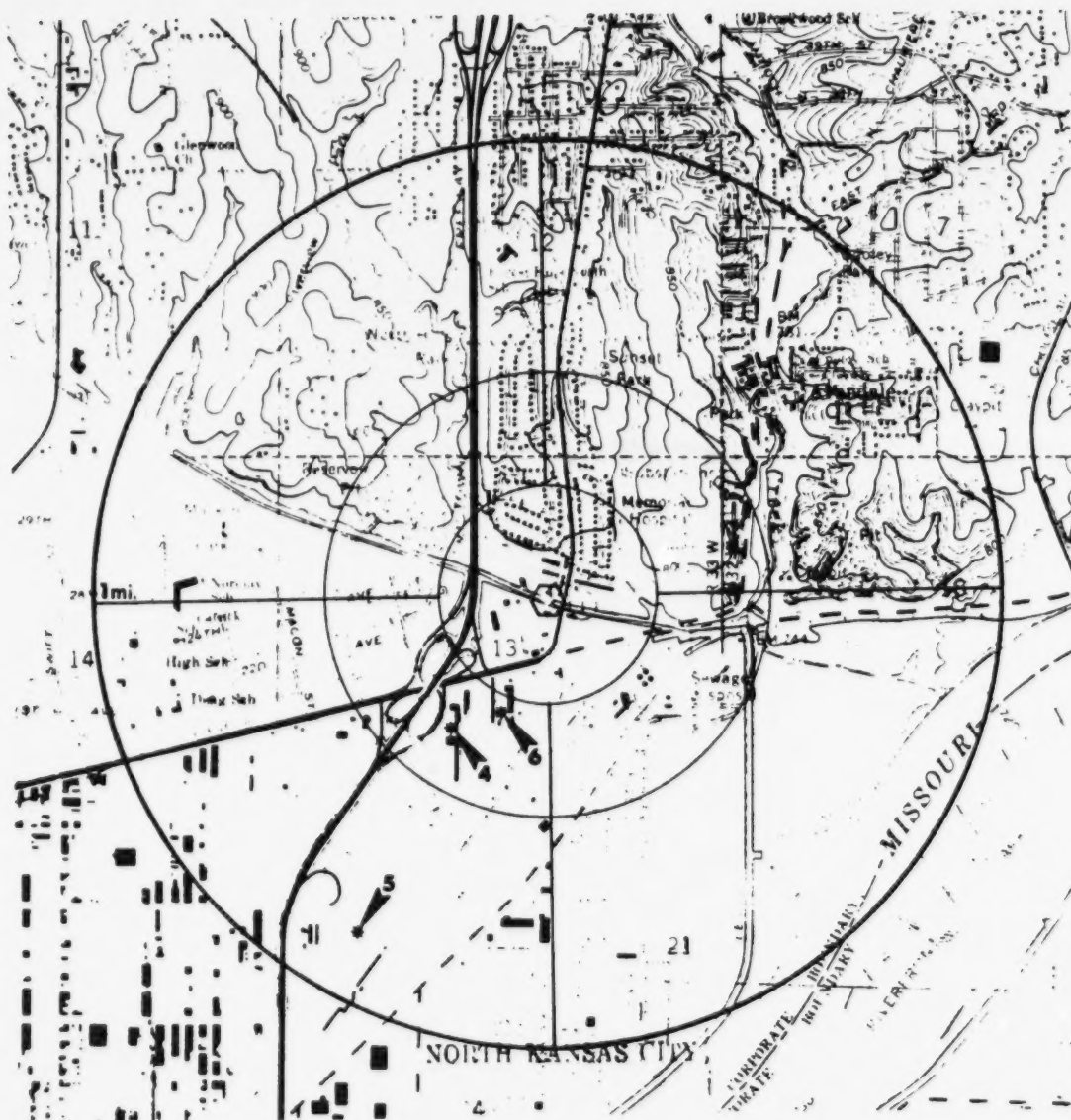
Topography - no special terrain

Localized sources, within 200 ft of monitor -

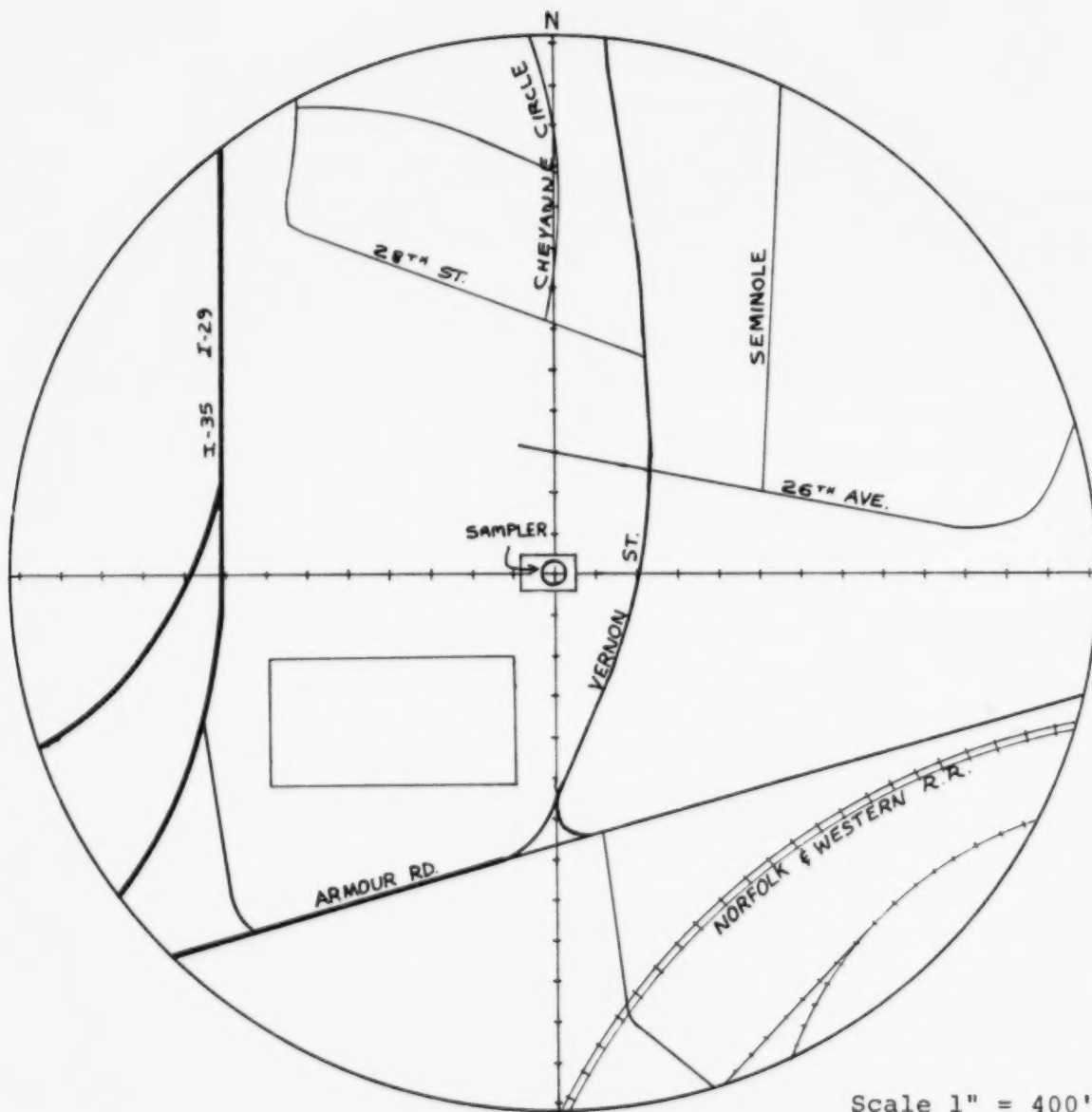
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Vernon Street	200 ft	2800 ADT, clean, uncurbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	88	55
1975	83	54
1974	67	24
1973	-	-



One mile radius around 68 Vernon Street site.



One-quarter mile radius around 68 Vernon Street site.



Viewed to the northwest.



Viewed to the southwest.

Sampler at 68 Vernon Street.

POINT SOURCE SUMMARY

Site: 68 Vernon Street

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
6	104	.33	200
4	104	.38	210
5	99	.88	220
2	757	1.4	260
3	758	1.4	250
8	15	1.7	180
9	46	1.7	175
7	814	1.9	220
15	41	2.1	110
13	341	2.4	130
32	449	2.5	255
10	737	2.7	240
14	327	3.0	115
29	1,559	3.2	275
31	283	3.2	255
30	1,030	3.2	260
11	28	3.4	210
34	245	3.5	230
16	249	3.7	120
28	38	3.9	275
33	88	4.0	240
22	1,233	4.2	130
17	44,460	4.4	105
27	891	4.5	275
23	43	4.6	145

AREA SOURCE SUMMARY

Site: 68 Vernon Street

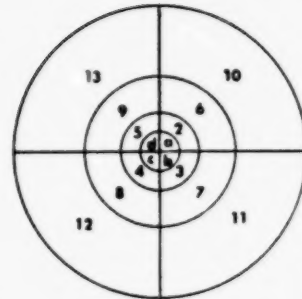
Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	6722 pop	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4	0.4	2.1
Comm/Ind fuel	3402 emp	0.2	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	2.6
Incinerators											
Rail/Air		0.2		1.2	0.6			0.1	2.2		4.3
Auto exhaust	59.9x10 ⁶ VMT	7.9	0.1	1.6	5.1	4.0	0.4	3.2	9.5	7.5	39.3
INDUS PROCESSES:											
Ind processes	3 sources								12.0		12.0
FUGITIVE DUST:											
Railroad yards	96 ac	0.5		2.6	1.4			0.3	5.2		10.0
Clean streets	58.1x10 ⁶ VMT	43.6	0.6	8.7	28.3	24.0	2.1	17.4	50.1	43.6	218.4
Comm streets	1.8x10 ⁶ VMT			2.9	2.9			2.9	20.5		29.2
Unpaved roads											
Cleared areas											
Construction	4 ac									1.2	1.2
Agriculture	24 ac							0.3	0.4		0.7
Storage areas											
Unpaved pkg lots	0.3 ac			0.2							0.2
Recap		Emissions by sector, t/yr									
		1	2-5	6-9	Total						
COMBUSTION		8.4	13.4	26.5	48.3						
IND PROCESSES				12.0	12.0						
FUGITIVE DUST		44.1	71.6	144.0	259.7						
Total		52.5	85.0	182.5	320.0						

DESCRIPTION OF SITE

SAROAD code - 26 2380 006 H01

Location - 5130 Deramus, Kansas City,
Missouri

Monitor height - 20 ft, on roof of
fire station



Land use, by sector -

1a agriculture
1b light industry
1c light industry
1d light industry

6 undeveloped
7 light industry
8 light industry
9 undeveloped

2 agriculture
3 agriculture
4 light industry
5 undeveloped

10 undeveloped
11 general industry
12 dense residential
13 dense residential

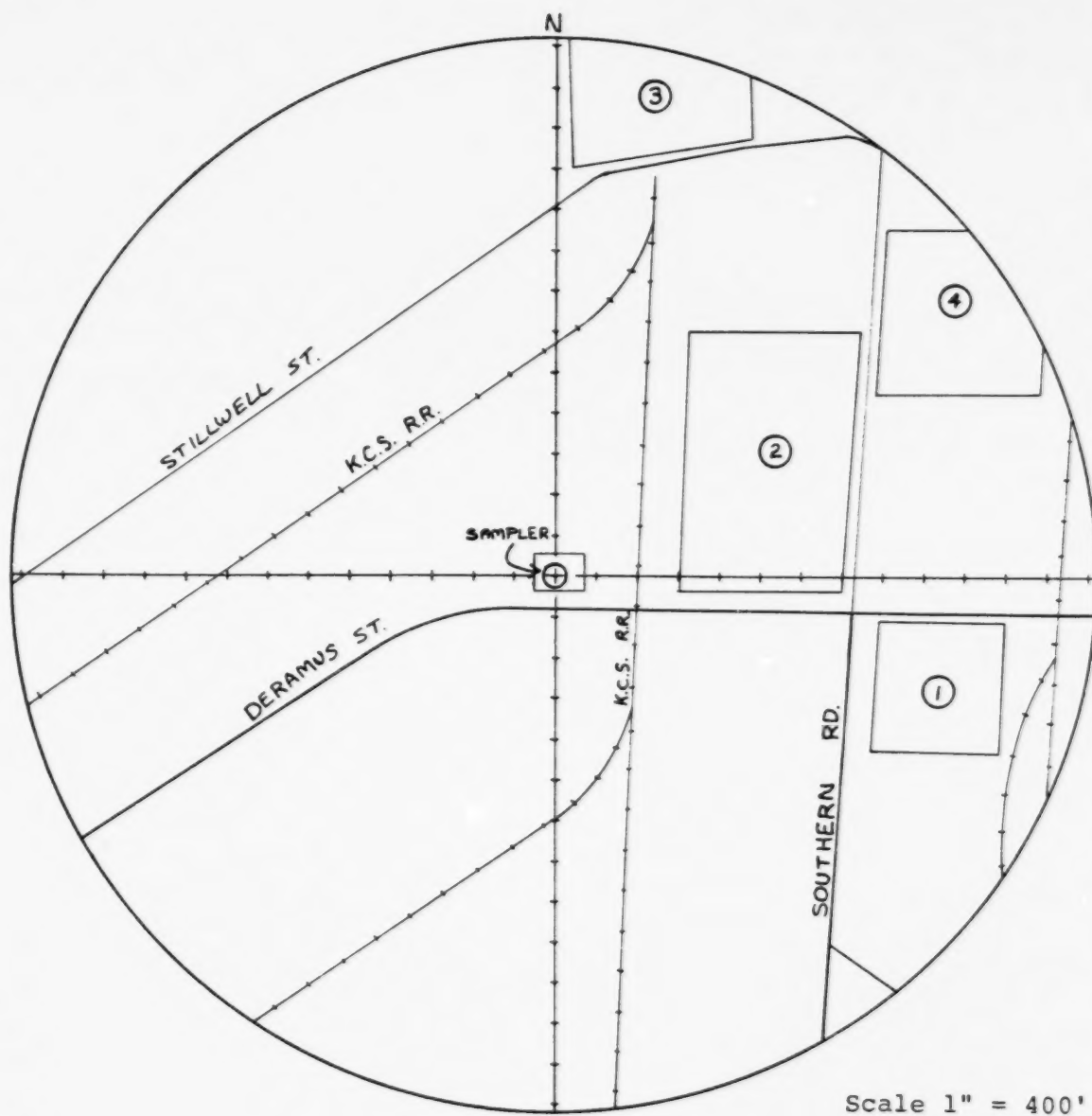
Topography - no special terrain

Localized sources, within 200 ft of monitor -

Source	Distance	Description
Deramus	80 ft	500 ADT, clean, curbed

Air quality data -

Year	Annual geometric mean, ug/m ³	No. of samples
1977	82	-
1976	80	46
1975	79	56
1974	81	53
1973	75	54



1. Agricultural area, 2 acres
2. Agricultural area, 6 acres
3. Agricultural area, 3.7 acres
4. Agricultural area, 1.5 acres

One-quarter mile radius around 5130 Deramus site.



Viewed to the north.



Viewed to the west.

Sampler at 5130 Deramus.

POINT SOURCE SUMMARY

Site: 5130 Deramus

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
14	327	1.1	135
13	341	1.1	190
15	41	1.3	145
16	249	1.9	140
6	104	2.0	275
9	46	2.2	235
4	104	2.2	275
17	44,460	2.4	105
8	15	2.4	240
5	99	2.4	260
22	1,233	2.5	150
7	814	3.0	245
2	757	3.2	275
3	758	3.3	270
23	43	3.5	155
10	737	3.7	240
24	98	3.8	155
18	1,062	4.0	110
11	28	4.3	235
32	449	4.5	265
25	893	4.5	150
34	245	5.0	255

AREA SOURCE SUMMARY

Site: 5130 Deramus

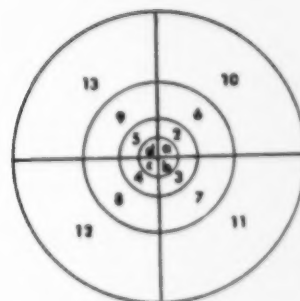
Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	1772 pop						0.1	0.1	0.1	0.1	0.4
Comm/Ind fuel	7434 emp	0.4	0.3	0.3	0.3	0.3	1.4	1.4	1.4	1.4	7.2
Incinerators											
Rail/Air											
Auto exhaust	21.6x10 ⁶ VMT	0.1					0.8	3.1	4.5	5.7	14.2
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards	59 ac							3.1	2.8		5.9
Clean streets	21.6x10 ⁶ VMT	0.3					4.8	17.7	25.8	32.2	80.8
Comm streets											
Unpaved roads											
Cleared areas											
Construction											
Agriculture	490.2 ac	0.3	1.7	1.0				3.9	5.8		12.7
Storage areas											
Unpaved pkg lots											
Recap		Emissions by sector, t/yr									Total
		1	2-5	6-9							
COMBUSTION		0.5	1.2	20.1	21.8						
IND PROCESSES											
FUGITIVE DUST		0.6	2.7	96.1	99.4						
Total		1.1	3.9	116.2	121.2						

DESCRIPTION OF SITE

SAROAD code - 26 2380 006 H01

Location - 101 Lou Holland, North
Kansas City, Missouri

Monitor height - 18 ft, on a pumping
station



Land use, by sector -

1a airport (KC Municipal)
1b undeveloped
1c undeveloped
1d airport (KC Municipal)

6 airport (KC Municipal)
7 central commercial
8 general industry
9 light industry

2 airport (KC Municipal)
3 light industry
4 light industry
5 airport (KC Municipal)

10 general industry
11 central commercial
12 general industry
13 general industry

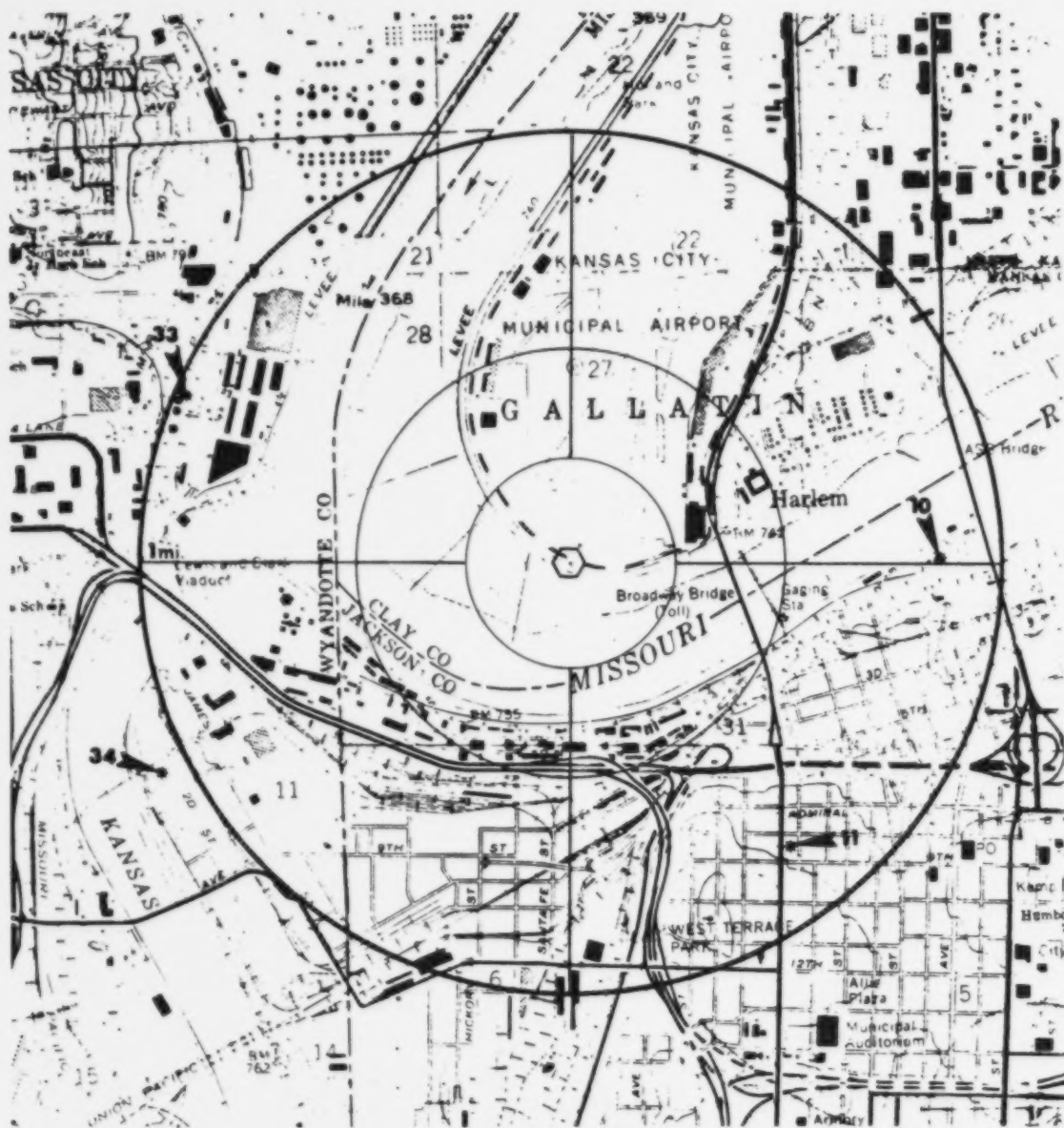
Topography - no special terrain

Localized sources, within 200 ft of monitor -

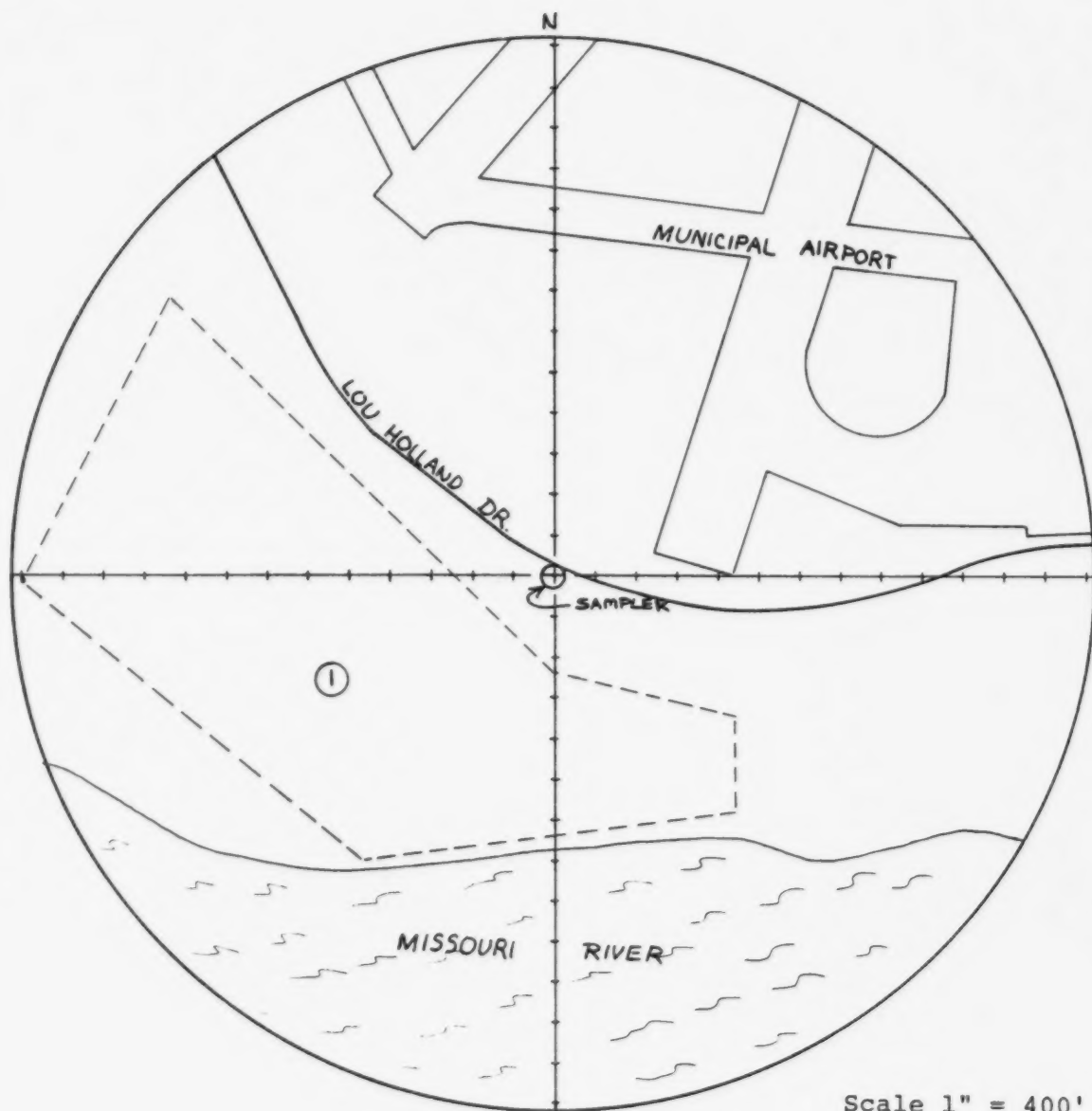
Source	Distance	Description
Lou Holland	36 ft	75 ADT, paved, clean, uncurbed

Air quality data -

Year	Annual geometric mean, ug/m ³	No. of samples
1977	83	-
1976	95	43
1975	90	26
1974	105	23
1973	102	54



One mile radius around 101 Lou Holland site.



1. Exposed area, 35 acres

One-quarter mile radius around 101 Lou Holland site.



Viewed to the northwest.



Viewed to the east.

Sampler at 101 Lou Holland.

POINT SOURCE SUMMARY

Site: 101 Lou Holland

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
11	28	.78	145
10	737	.81	100
33	88	1.0	300
34	245	1.1	235
7	814	1.5	65
32	449	1.6	355
3	758	2.0	25
31	282	2.1	330
30	1,030	2.1	332
8	15	2.1	75
2	757	2.2	25
9	46	2.3	80
5	99	2.3	50
29	1,559	2.6	340
12	65	2.6	190
4	104	2.8	45
6	104	2.8	48
28	38	3.1	328
44	40	3.2	224
45	50	3.2	195
41	89	3.3	242
42	65	3.3	240
27	891	3.4	319
39	72	3.5	247
43	785	3.5	237
40	43	3.5	240
13	341	4.0	80
38	107	4.3	247
15	41	4.8	84
14	327	4.9	79

AREA SOURCE SUMMARY

Site: 101 Lou Holland

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	1845 pop										
Comm/Ind fuel	11029 emp	0.7	0.6	0.6	0.6	0.6	2.2	2.2	2.2	2.2	neg
Incinerators											
Rail/Air	3 tons	0.2	0.5			0.1	2.2				3.0
Auto exhaust	66.3x10 ⁶ VMT	neg	0.9	0.9			2.6	19.7	19.7		43.8
INDUS PROCESSES:											
Ind processes	3 sources			5.0					14.0	14.0	33.0
FUGITIVE DUST:											
Railroad yards	140 ac		0.4	0.5	0.2		3.0	4.0	4.4	1.5	14.0
Clean streets	64.3x10 ⁶ VMT	neg	7.2	4.8			14.5	110.9	103.6		241.0
Comm streets	2.0x10 ⁶ VMT							3.3	25.9	3.3	32.5
Unpaved roads											
Cleared areas	70 ac	0.2				0.2					0.4
Construction											
Agriculture											
Storage areas											
Unpaved pkg lots											

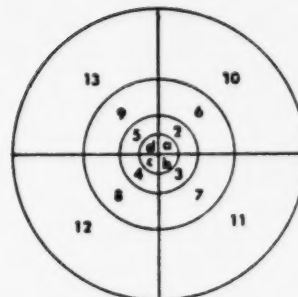
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	0.9	4.2	50.8	55.9
IND PROCESSES		5.0	28.0	33.0
FUGITIVE DUST	0.2	13.3	274.4	287.9
Total	1.1	22.5	353.2	376.8

DESCRIPTION OF SITE

SAROAD code - 26 2380 022 H01

Location - 405 Missouri Avenue,
Kansas City, Missouri

Monitor height - 10 ft, on a one-story
building



Land use, by sector -

1a light industry	6 light industry
1b central commercial	7 central commercial
1c central commercial	8 central commercial
1d central commercial	9 light industry
2 light industry	10 general industry
3 central commercial	11 dense residential
4 central commercial	12 general industry
5 central commercial	13 general industry

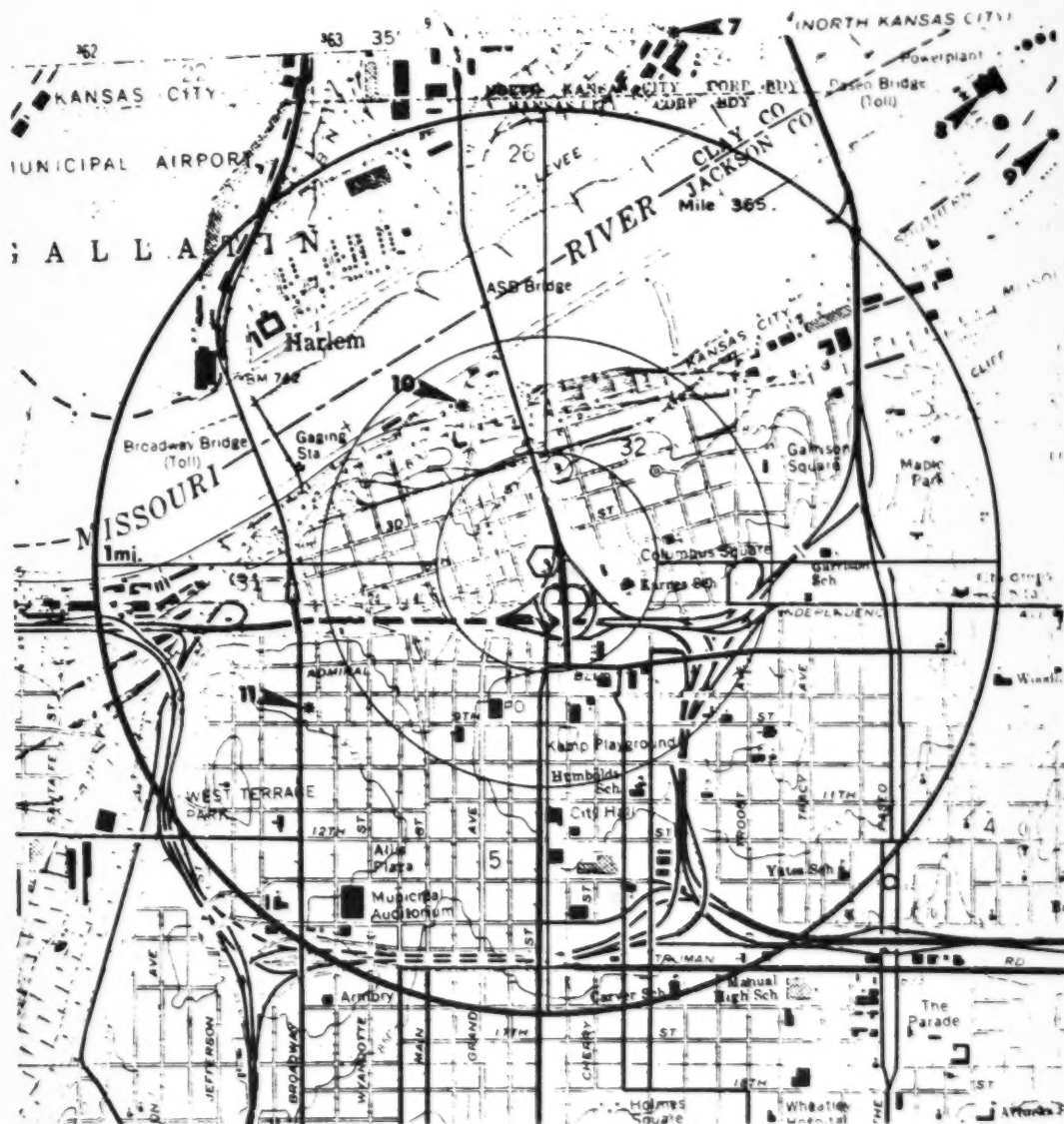
Topography - no special terrain

Localized sources, within 200 ft of monitor -

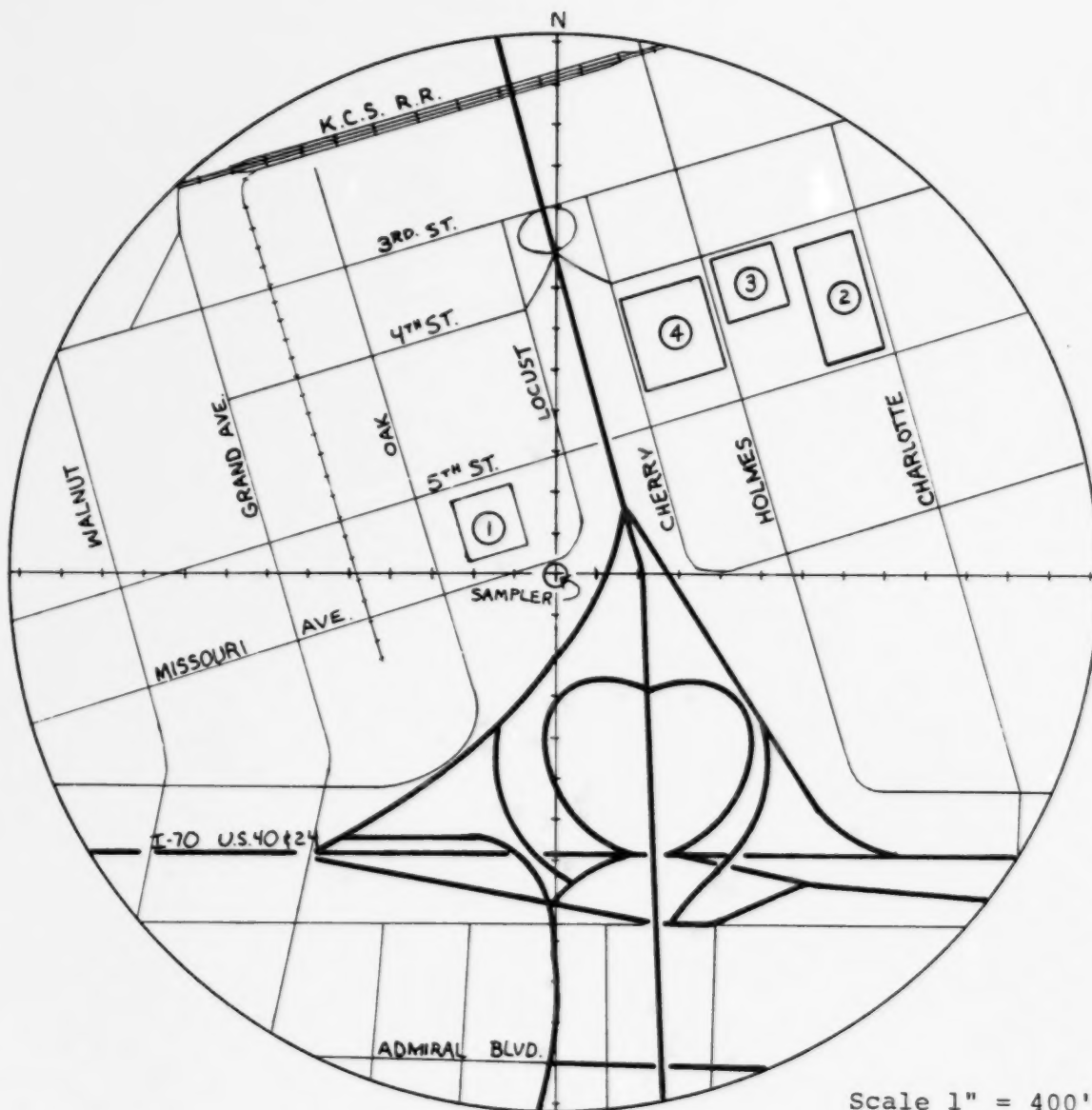
<u>Source</u>	<u>Distance</u>	<u>Description</u>
ASB Bridge off ramp	65 ft	46,220 ADT, clean, curbed
Missouri Avenue	30 ft	75 ADT, clean, curbed
Unpaved lot	200 ft	0.5 acre, 20 trucks

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	Closed in 1976	
1975	125	41
1974	110	19
1973	-	-



One mile radius around 405 Missouri Avenue site.



1. Unpaved lot, 0.5 acres, 20 trucks
2. Unpaved lot, 1.0 acres, 20 trucks
3. Unpaved lot, 0.5 acres, 20 trucks
4. Sand and gravel storage, 1.0 acre

One-quarter mile radius around 405 Missouri Avenue site.



Viewed to the east.



Viewed to the west.

Sampler at 405 Missouri Avenue.

POINT SOURCE SUMMARY

Site: 405 Missouri Avenue

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
10	737	.34	335
11	28	.62	240
7	814	1.2	15
8	15	1.4	45
9	34	1.5	50
33	88	1.8	275
34	245	2.0	300
5	99	2.1	20
3	758	2.2	255
32	449	2.4	230
2	757	2.4	255
4	104	2.5	20
12	65	2.6	210
6	104	2.6	25
31	282	2.9	318
30	1,030	3.0	315
13	341	3.1	70
45	50	3.3	215
29	1,559	3.4	325
15	41	3.9	73
44	40	4.0	235
14	327	4.0	70
28	38	4.0	315
42	65	4.0	250
41	89	4.0	255
43	785	4.2	250
22	1,233	4.3	90
39	72	4.3	250
16	249	4.3	80
27	891	4.4	310
23	43	4.6	100
24	98	4.9	105
25	893	5.0	115
40	43	5.0	255

AREA SOURCE SUMMARY

Site: 405 Missouri Avenue

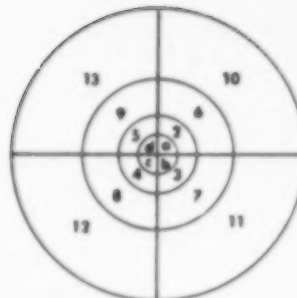
Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	22270 pop	0.4	0.3	0.3	0.3	0.3	1.2	1.2	1.2	1.2	6.4
Comm/Ind fuel	89310 emp	5.5	4.3	4.3	4.3	4.3	17.2	17.2	17.2	17.2	91.5
Incinerators											
Rail/Air			2.0			1.8	2.8		1.8	1.6	10.0
Auto exhaust	136.5x10 ⁶ VMT	12.6	1.8	11.7	7.2	3.6	7.2	19.8	16.2	9.9	90.0
INDUS PROCESSES:											
Ind processes	1 source						8.0				8.0
FUGITIVE DUST:											
Railroad yards	57 ac		1.2			1.0	1.6		1.0	0.9	5.7
Clean streets	136.5x10 ⁶ VMT	71.6	10.2	66.5	40.9	20.5	40.9	107.4	92.1	56.3	506.4
Comm streets											
Unpaved roads											
Cleared areas	1.1 ac		1.5								1.5
Construction											
Agriculture											
Storage areas	23 ac, aggregate	2.1	16.0			14.0	17.0				49.1
Unpaved pkg lots	3 ac	0.7				0.3					1.0
Recap		Emissions by sector, t/yr									Total
		1	2-5	6-9						Total	
COMBUSTION		18.5	46.5	132.9						197.9	
IND PROCESSES										8.0	
FUGITIVE DUST		74.4	172.1	317.2						563.7	
Total		92.9	218.6	458.1						768.6	

DESCRIPTION OF SITE

SAROAD code - 26 2380 012 H01

Location - 6600 Independence Avenue,
Kansas City, Missouri

Monitor height - 30 ft, on roof of
fire station



Land use, by sector -

1a general industry	6 light industry
1b dense residential	7 general industry
1c dense residential	8 dense residential
1d general industry	9 dense residential
2 general industry	10 undeveloped
3 general industry	11 dense residential
4 dense residential	12 dense residential
5 light industry	13 general industry

Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Bennington	30 ft	200 ADT, clean, curbed
Independence	90 ft	27,960 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	Closed during 1977	-
1976	89	41
1975	85	53
1974	82	56
1973	79	54



One mile radius around 6600 Independence Avenue site.



1. Unpaved lot, 1.0 acres, 20 trucks
2. Unpaved lot, 4.1 acres, 40 trucks
3. Unpaved lot, 0.2 acres, 60 cars
4. Unpaved lot, 0.3 acres, 30 cars
5. Rail yard, 20 acres

One-quarter mile radius around 6600 Independence Avenue site.



Viewed to the north-northeast.



Viewed to the southeast.

Sampler at 6600 Independence Avenue.

POINT SOURCE SUMMARY

Site: 6600 Independence Avenue

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
22	1,233	0.38	50
23	104	0.81	135
16	249	1.1	15
24	98	1.3	145
15	41	1.4	350
14	327	1.6	350
13	341	1.7	320
25	893	1.9	160
17	44,460	2.2	35
18	1,062	2.9	70
9	46	3.0	290
8	15	3.2	290
26	48	3.6	180
7	814	3.9	290
5	99	3.9	305
6	104	4.0	320
4	104	4.1	320
10	737	4.1	275
11	28	4.5	265
2	757	4.9	305
3	758	4.9	300

AREA SOURCE SUMMARY

Site: 6600 Independence Avenue

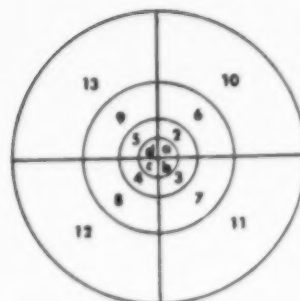
Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	11,355 pop	0.2	0.1	0.1	0.1	0.1	0.6	0.6	0.6	0.6	3.0
Comm/Ind fuel	10,504 emp	0.6	0.5	0.5	0.5	0.5	2.0	2.0	2.0	2.0	10.6
Incinerators	4	0.1									0.1
Rail/Air											
Auto exhaust	55x10 ⁶ VMT	3.6	0.4	3.6	2.2	3.3	4.0	9.8	9.1	0.4	36.4
INDUS PROCESSES:											
Ind processes	5 sources	1.0						3.0	4.0	14.0	22.0
FUGITIVE DUST:											
Railroad yards	75 ac	0.2	0.6	0.6	0.4		2.1	0.8	0.4	2.4	7.5
Clean streets	53.3x10 ⁶ VMT	20.0	2.0	18.0	12.0	18.0	20.0	55.9	51.9	2.0	199.8
Comm streets	1.7x10 ⁶ VMT		6.8	6.8			6.8	6.8			27.2
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas	56 ac						10.9	0.3			11.2
Unpaved pkg lots	5.6 ac	1.4									1.4
Recap		Emissions by sector, t/yr									
		1	2-5		6-9		Total				
COMBUSTION		4.5	11.9		33.7		50.1				
IND PROCESSES		1.0			21.0		22.0				
FUGITIVE DUST		21.6	65.2		160.3		247.1				
Total		27.1	77.1		215.0		319.2				

DESCRIPTION OF SITE

SAROAD code - 26 2180 004 H01

Location - 2408 North Liberty,
Independence, Missouri

Monitor height - 25 ft, on roof of
grocery store



Land use, by sector -

1a undeveloped	6 undeveloped
1b undeveloped	7 undeveloped
1c light residential	8 undeveloped
1d dense residential	9 undeveloped
2 undeveloped	10 general industry
3 undeveloped	11 dense residential
4 light residential	12 dense residential
5 dense residential	13 undeveloped

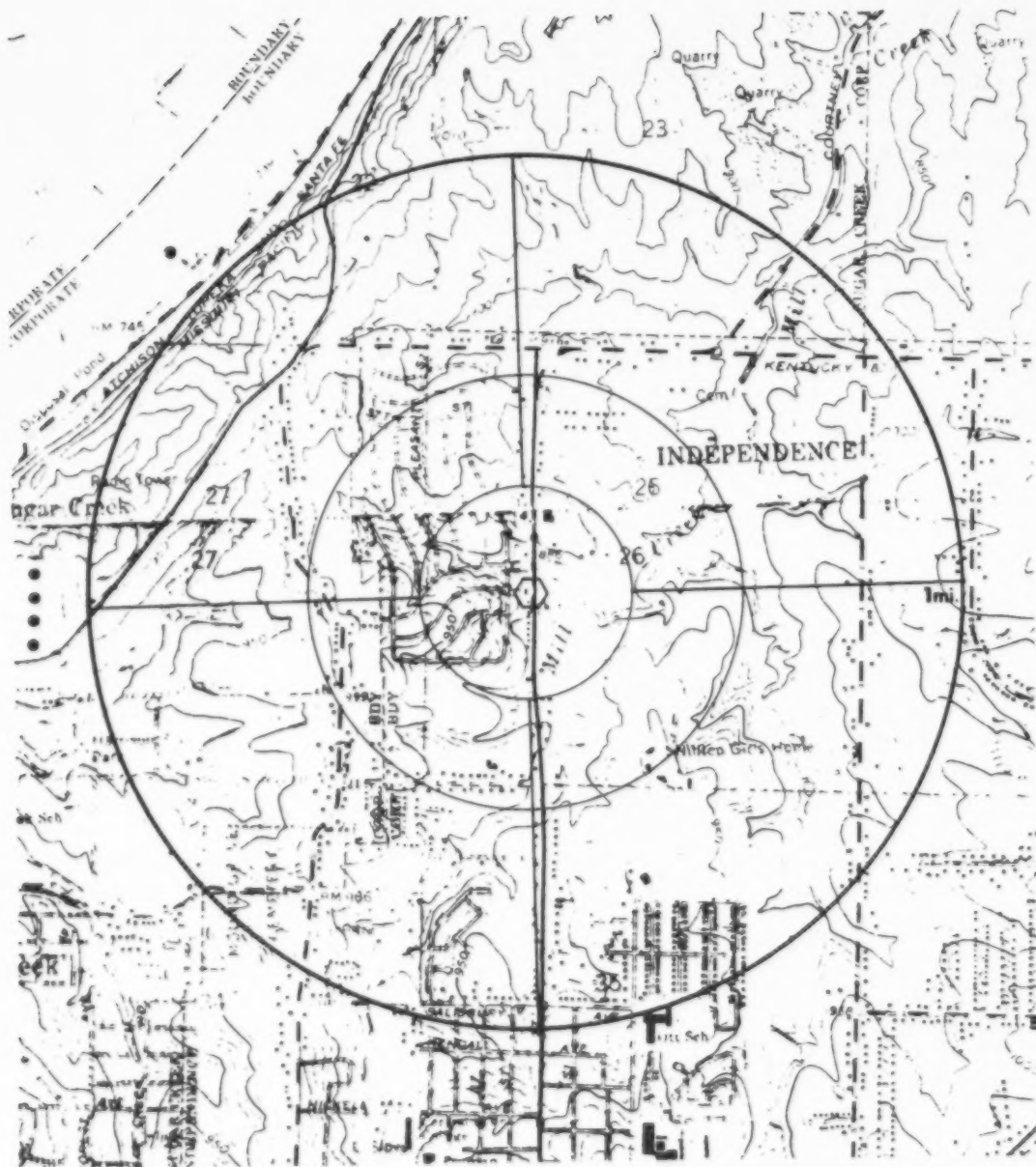
Topography - no special terrain

Localized sources, within 200 ft of monitor -

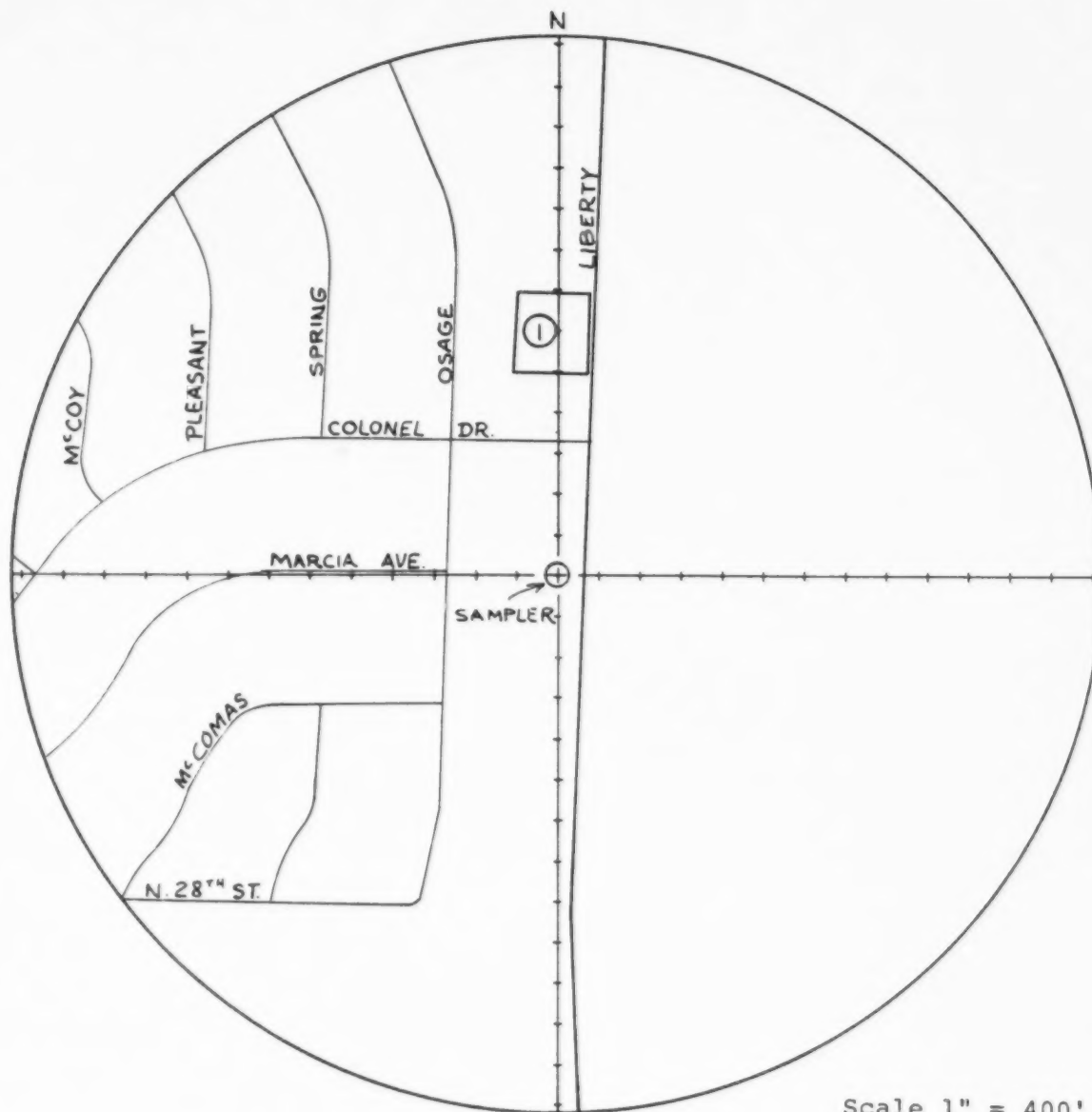
<u>Source</u>	<u>Distance</u>	<u>Description</u>
North Liberty	115 ft	2260 ADT, clean, uncurbed
Thriftway incinerator	35 ft	Used infrequently

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	73	39
1975	73	52
1974	73	45
1973	70	55



One mile radius around 2408 North Liberty site.



Scale 1" = 400'

1. Unpaved church parking lot, 0.3 acre, 100 cars

One-quarter mile radius around 2408 North Liberty site.



Viewed to the north-northeast.



Viewed to the south.

Sampler at 2408 North Liberty.

POINT SOURCE SUMMARY

Site: 2408 North Liberty

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
19	1,278	1.6	0
21	185	1.8	62
18	1,062	1.8	262
20	76	2.0	52
17	44,460	3.4	260
16	249	4.3	265
22	1,233	4.5	255
23	43	4.5	245
24	98	4.6	240
15	41	4.8	272
14	327	4.9	275

AREA SOURCE SUMMARY

Site: 2408 North Liberty

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	7910 pop	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4	0.4	2.1
Comm/Ind fuel	882 emp	0.1					0.2	0.2	0.2	0.2	0.9
Incinerators											
Rail/Air											
Auto exhaust	7.4x10 ⁶ VMT	0.3	0.1	0.1	0.4	0.1	0.7	0.3	1.1	1.8	4.9
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards											
Clean streets	7.4x10 ⁶ VMT	1.7	0.8	0.8	2.5	0.3	3.8	1.7	6.1	10.0	27.7
Comm streets											
Unpaved roads											
Cleared areas											
Construction											
Agriculture	800 ac	1.2	1.0	1.0	1.0	1.0	3.9	3.9	3.9	3.9	20.8
Storage areas											
Unpaved pkg lots	0.3 ac	0.3									0.3

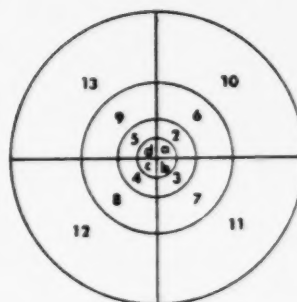
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	0.5	1.1	6.3	7.9	
IND PROCESSES					
FUGITIVE DUST	3.2	8.4	37.2	48.8	
Total	3.7	9.5	43.5	56.7	

DESCRIPTION OF SITE

SAROAD code - 26 2180 001 H01

Location - 213 South Main,
Independence, Missouri

Monitor height - 30 ft, on roof of
courthouse



Land use, by sector -

1a central commercial	6 dense residential
1b central commercial	7 dense residential
1c central commercial	8 dense residential
1d central commercial	9 dense residential
2 dense residential	10 light residential
3 dense residential	11 dense residential
4 dense residential	12 dense residential
5 dense residential	13 dense residential

Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Maple	100 ft	800 ADT, clean, curbed
Main	90 ft	800 ADT, clean, curbed
Lexington	100 ft	4200 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	78	41
1975	81	50
1974	85	38
1973	103	51



One mile radius around 213 South Main site.



Scale 1" = 400'

1. Unpaved parking lot, 0.2 acre, 30 cars
2. Unpaved parking lot, 0.1 acre, 5 cars
3. Unpaved parking lot, 1.8 acres, 100 cars

One-quarter mile radius around 213 South Main site.



Viewed to the southwest.



Viewed to the north-northwest.

Sampler at 213 South Main.

POINT SOURCE SUMMARY

Site: 213 South Main

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
18	1,062	2.5	315
21	185	3.2	30
19	1,278	3.4	0
20	76	3.6	25
24	98	4.0	265
23	43	4.2	275
17	44,460	4.3	310
25	893	4.3	255
22	1,233	4.4	285
16	249	4.7	295
1	202	4.8	95

AREA SOURCE SUMMARY

Site: 213 South Main

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	15,831 pop	0.3	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.8	4.3
Comm/Ind fuel	8183 emp	0.5	0.4	0.4	0.4	0.4	1.6	1.6	1.6	1.6	8.5
Incinerators											
Rail/Air											
Auto exhaust	45.3x10 ⁶ VMT	4.2	2.4	1.8	0.3	0.9	5.1	5.4	3.3	6.6	30.0
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards	14 ac	0.2	0.2		0.2			0.2	0.6		1.4
Clean streets	45.3x10 ⁶ VMT	23.8	13.6	10.2	1.7	5.1	28.8	30.5	18.7	37.3	169.7
Comm streets											
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas											
Unpaved pkg lots	2.1 ac	2.0									2.0

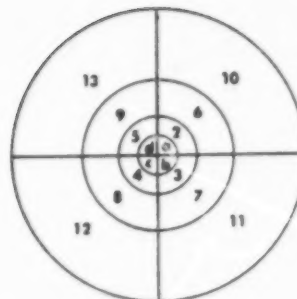
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	5.0	7.8	30.0	42.8
IND PROCESSES				
FUGITIVE DUST	26.0	31.0	116.1	173.1
Total	31.0	38.8	146.1	215.9

DESCRIPTION OF SITE

SAROAD code - 26 2380 005 H01

Location - 6402 East 37th,
Kansas City, Missouri

Monitor height - 35 ft, on roof of
fire station



Land use, by sector -

1a light industry	6 light industry
1b light residential	7 light industry
1c undeveloped	8 dense residential
1d light residential	9 dense residential
2 light industry	10 general industry
3 general industry	11 dense residential
4 undeveloped	12 dense residential
5 light residential	13 dense residential

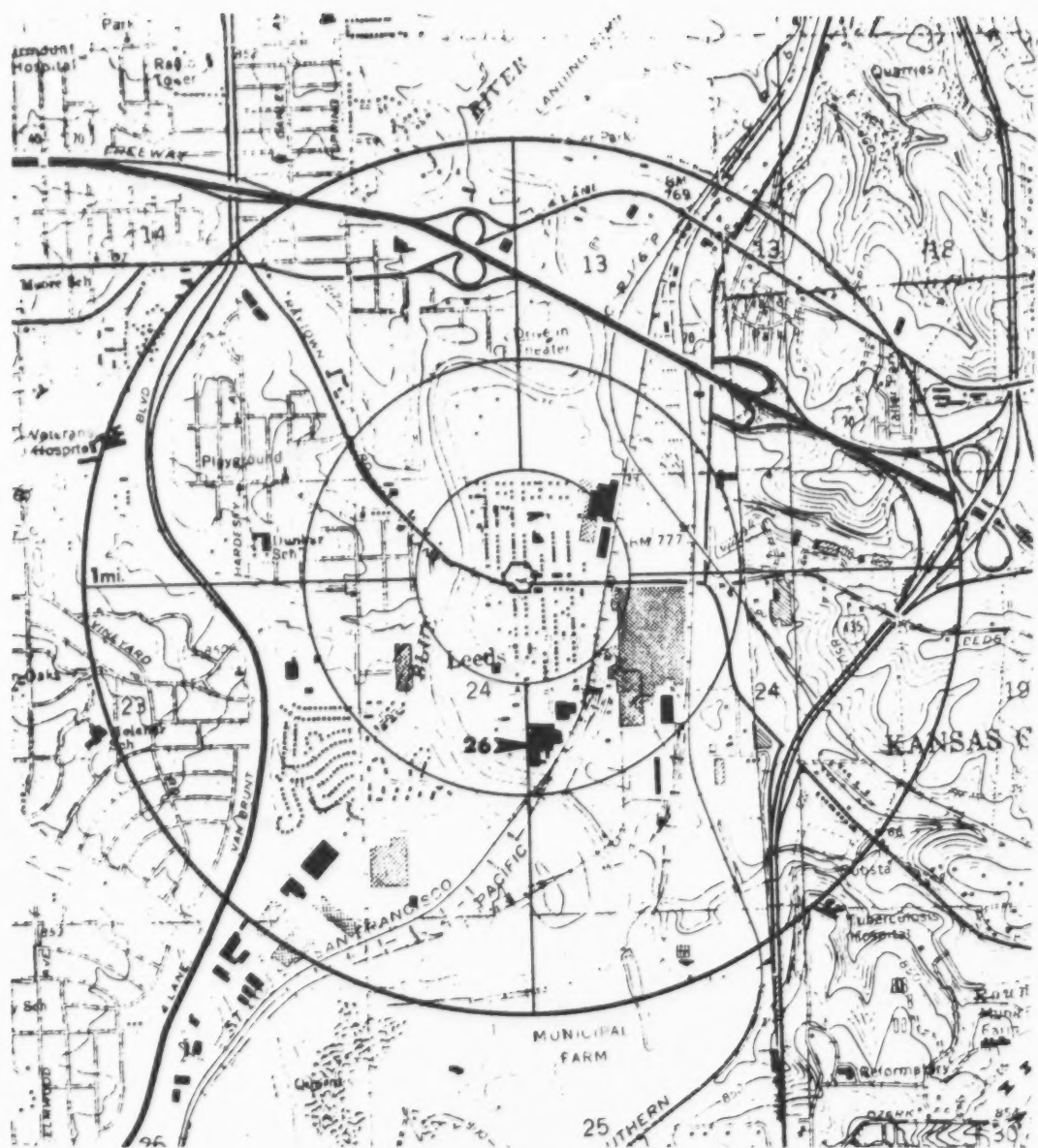
Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Stadium Drive	55 ft	7870 ADT, dirty, uncurbed
Unpaved parking lot	105 ft	0.1 acres, 10 cars
Unpaved alley	100 ft	5 cars
Fremont	60 ft	75 ADT, dirty, uncurbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	85	-
1976	89	53
1975	86	54
1974	89	47
1973	101	51



One mile radius around 6402 East 37th site.



Scale 1" = 400'

- | | |
|---------------------------------------|--------------------------------------|
| 1,7. Unpaved pkg lot, 0.1 ac, 10 cars | 12. Unpaved pkg lot, 0.8 ac, 20 cars |
| 2. Cleared area, 0.1 ac | 13. Unpaved pkg lot, 0.7 ac, 50 cars |
| 3,6. Unpaved pkg lot, 0.1 ac, 5 cars | 14. Unpaved storage area, 3.4 ac |
| 4. Unpaved storage area, 0.2 ac | 15. Unpaved storage area, 2.3 ac |
| 5. Unpaved pkg lot, 0.3 ac, 25 cars | 16. Unpaved road, 400 ft, 5 cars |
| 8. Unpaved pkg lot, 1.7 ac, 35 trucks | 17. Unpaved road, 300 ft, 10 cars |
| 9. Unpaved pkg lot, 1.5 ac, 150 cars | 18,19. Unpaved alley, 750 ft, 5 cars |
| 10. Unpaved storage area, 2.0 ac | 20. Unpaved road, 675 ft, 5 cars |
| 11. Unpaved storage area, 8.1 ac | 21. Unpaved road, 600 ft, 5 cars |

One-quarter mile radius around 6402 East 37th site.



Viewed to the northeast.



Viewed to the northwest.
Sampler at 6402 East 37th.

POINT SOURCE SUMMARY

Site: 6402 East 37th

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
26	48	.39	180
25	893	1.7	35
24	98	2.4	25
23	43	2.7	20
22	1,233	3.5	10
16	249	4.3	5
15	41	4.4	0
13	341	4.7	350
14	327	4.8	0
9	46	5.1	330

AREA SOURCE SUMMARY

Site: 6402 East 37th

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	9491 pop	0.2	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	2.6
Comm/Ind fuel	8081 emp	0.5	0.4	0.4	0.4	0.4	1.5	1.5	1.5	1.5	8.1
Incinerators											
Rail/Air											
Auto exhaust	97.4x10 ⁶ VMT	1.9	0.6	0.6	0.2	0.6	27.0	16.7	3.2	13.5	64.3
INDUS PROCESSES:											
Ind processes	4 sources	1		10					1.6	1.0	13.6
FUGITIVE DUST:											
Railroad yards	78 ac	0.4	2.0	1.2			3.0	0.5	0.7		7.8
Clean streets	94.5x10 ⁶ VMT	10.6	3.6	3.6	1.4	3.6	152.3	95.6	14.1	70.8	355.6
Comm streets	3.0x10 ⁶ VMT	1.6					9.6		19.1	19.1	49.4
Unpaved roads	2.7x10 ⁴ VMT	1.2									1.2
Cleared areas	0.1 ac	neg									
Construction											
Agriculture											
Storage areas	16 ac	3.2									3.2
Unpaved pkg lots	25.4 ac	4.8					12.0		7.4		24.2

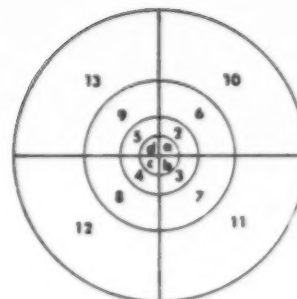
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	2.6	4.0	68.4	75.0	
IND PROCESSES	1.0	10.0	2.6	13.6	
FUGITIVE DUST	21.8	15.4	404.2	441.4	
Total	25.4	29.4	475.2	530.0	

DESCRIPTION OF SITE

SAROAD code - 26 2380 003 H01

Location - 5100 Troost, Kansas City,
Missouri

Monitor height - 30 ft, on roof of UMKC
maintenance building



Land use, by sector -

1a dense residential	6 dense residential
1b dense residential	7 dense residential
1c dense residential	8 dense residential
1d dense residential	9 dense residential
2 dense residential	10 dense residential
3 dense residential	11 dense residential
4 dense residential	12 dense residential
5 dense residential	13 dense residential

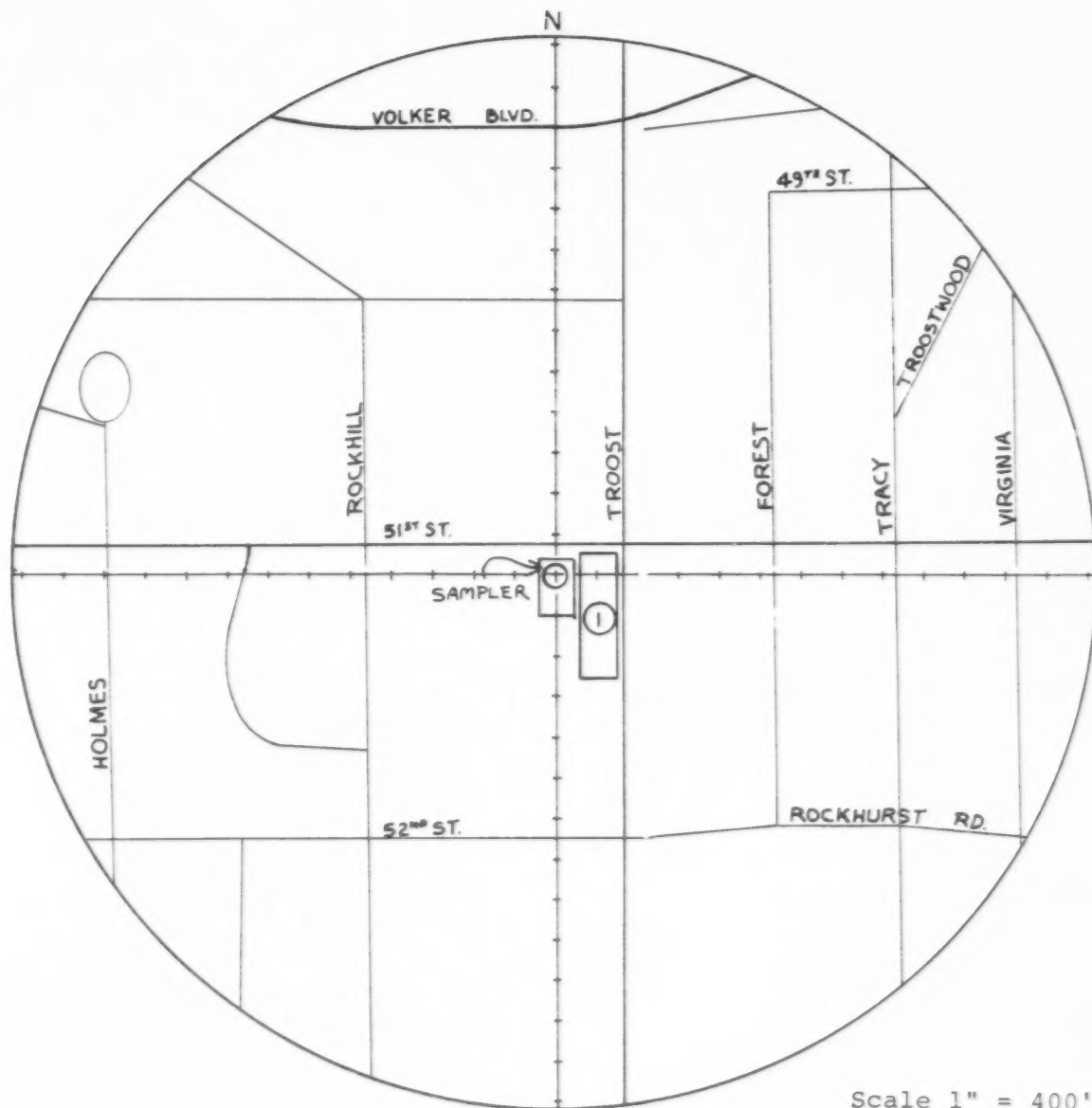
Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Troost	177 ft	17,620 ADT, clean, curbed
Fifty-first Street	85 ft	2800 ADT, clean, curbed
Storage site	100 ft	0.6 ac, for sand, gravel, construction materials

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	64	-
1976	69	59
1975	65	56
1974	65	50
1973	64	50



1. Construction materials storage, 0.6 acres

One-quarter mile radius around 5100 Troost site.



Viewed to the north.



Viewed to the south.

Sampler at 5100 Troost.

POINT SOURCE SUMMARY

Site: 5100 Troost

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
45	50	3.2	320
12	65	3.4	330
26	48	3.7	70
44	40	4.7	310
11	28	4.9	350

AREA SOURCE SUMMARY

Site: 5100 Troost

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	26417 pop	0.4	0.3	0.3	0.3	0.3	1.4	1.4	1.4	1.4	7.2
Comm/Ind fuel	15960 emp	1.0	0.8	0.8	0.8	0.8	3.1	3.1	3.1	3.1	16.6
Incinerators	1							0.8			0.8
Rail/Air											
Auto exhaust	78.4x10 ⁶ VMT	4.7	5.2	3.6	1.0	1.0	8.8	7.8	7.2	12.4	51.7
INDUS PROCESSES:											
Ind processes	1 source									9.0	9.0
FUGITIVE DUST:											
Railroad yards											
Clean streets	78.4x10 ⁶ VMT	26.4	29.3	20.6	5.9	5.9	49.9	44.0	41.2	70.5	293.7
Comm streets											
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas	0.6 ac	0.4									0.4
Unpaved pkg lots											

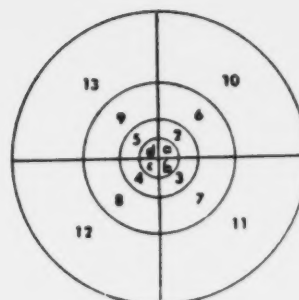
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	6.1	15.2	55.0	76.3	
IND PROCESSES			9.0	9.0	
FUGITIVE DUST	26.8	61.7	205.6	294.1	
Total	32.9	76.9	269.6	379.4	

DESCRIPTION OF SITE

SAROAD code - 26 3960 001 F01

Location - 9900 East 63rd Street,
Raytown, Missouri

Monitor height - 15 ft, on roof of
water department offices



Land use, by sector -

1a suburban commercial	6 dense residential
1b suburban commercial	7 dense residential
1c light residential	8 dense residential
1d light residential	9 dense residential
2 dense residential	10 dense residential
3 dense residential	11 light residential
4 dense residential	12 dense residential
5 light residential	13 dense residential

Topography - no special terrain

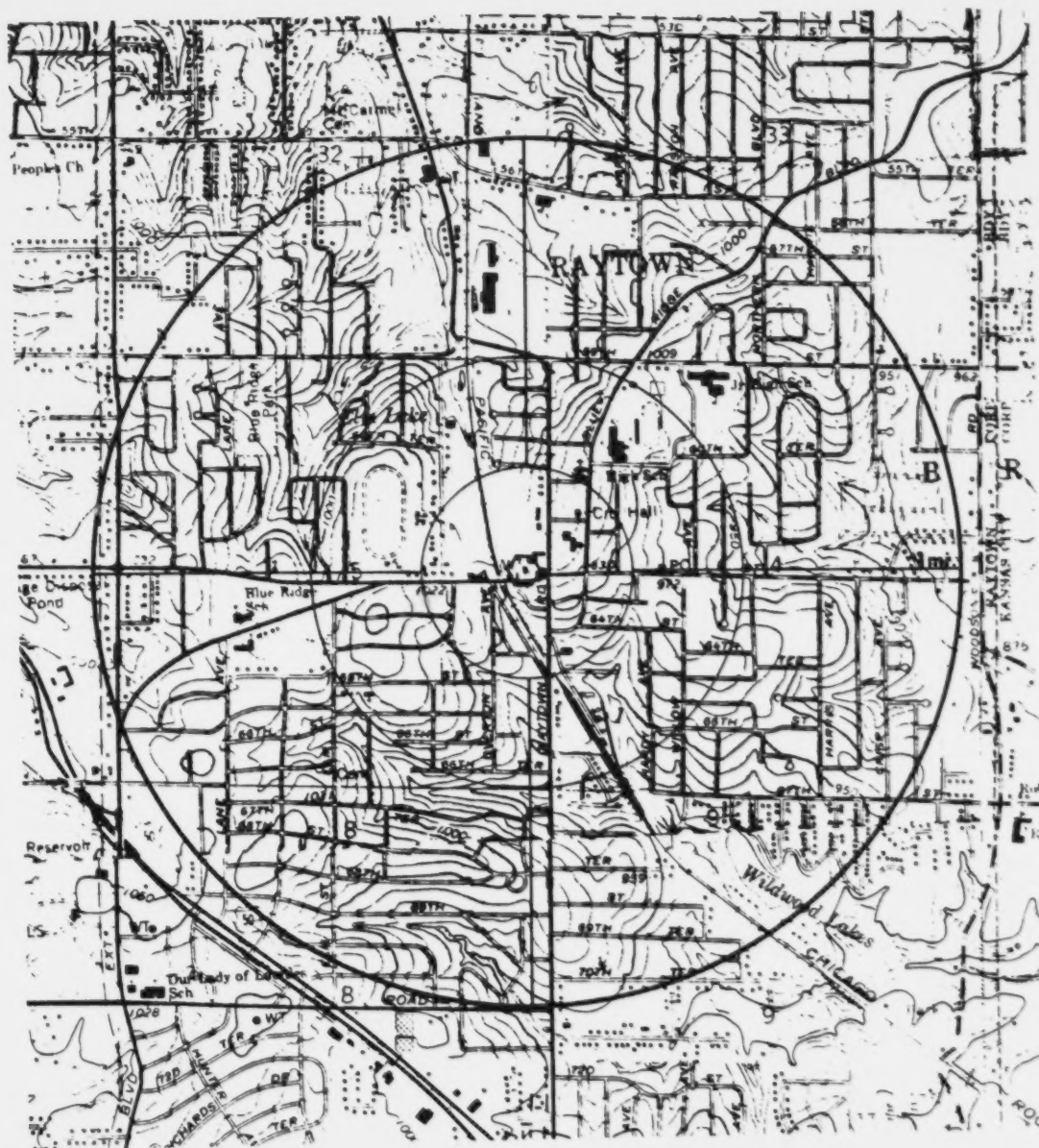
Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
63rd Street	75 ft	16,660 ADT, clean, curbed

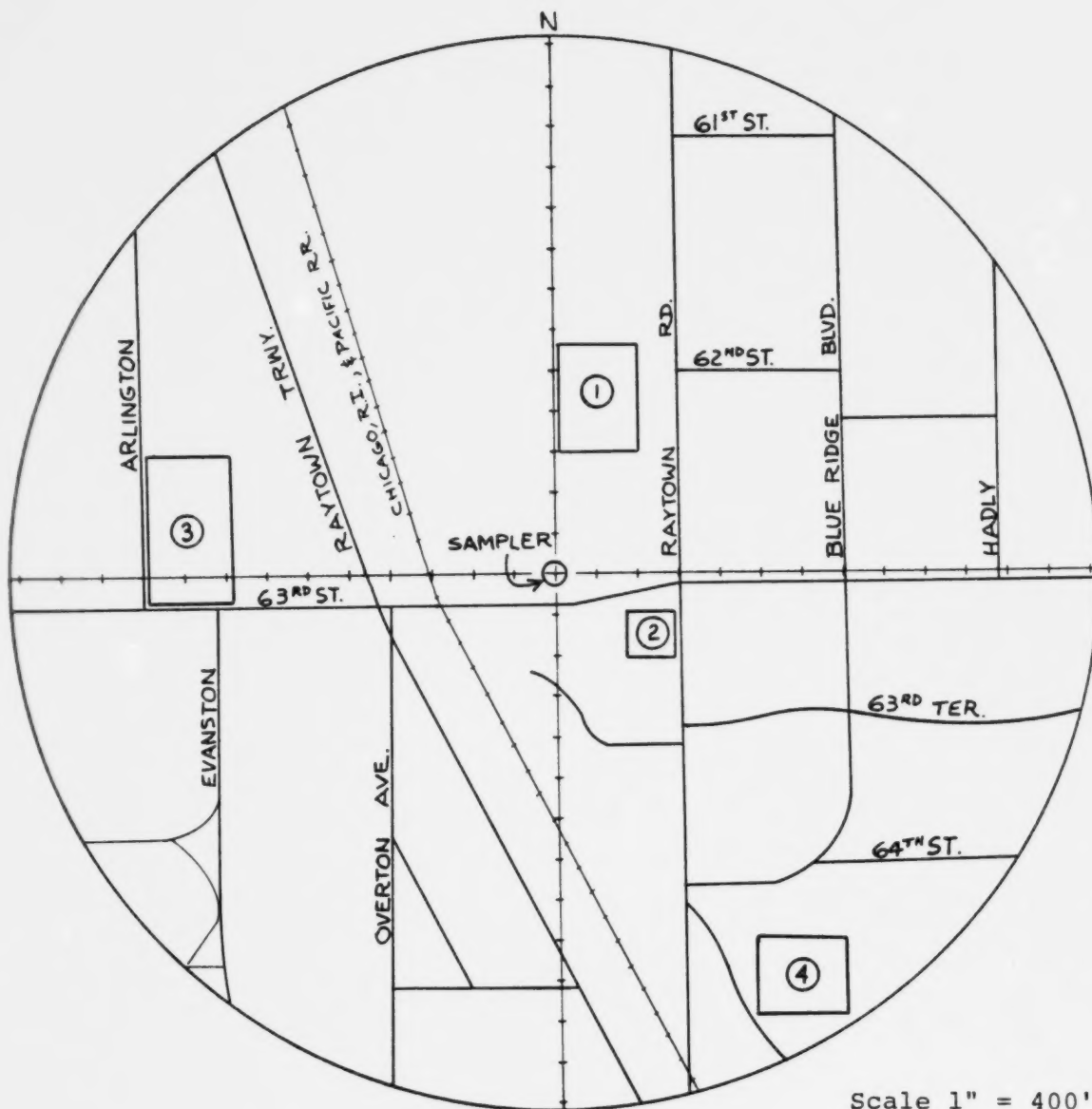
Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	60	5 ^a
1975	51	33
1974	55	38
1973	59	41

^a Site moved to 10000 East 54th Street in late 1976.



One mile radius around 9900 East 63rd Street site.



1. Exposed area, 0.9 acre
2. Unpaved parking lot, 0.2 acre, 25 cars
3. Exposed area, 2.1 acres
4. Aggregate storage, 1 acre

One-quarter mile radius around 9900 East 63rd Street site.



Viewed to the east-northeast.



Viewed to the west-northwest.
Sampler at 9900 East 63rd Street.

POINT SOURCE SUMMARY

Site: 9900 East 63rd Street

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
26	48	3.9	320
25	893	5.1	345

AREA SOURCE SUMMARY

Site: 9900 East 63rd Street

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	11581 pop	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	3.4
Comm/Ind fuel	2306 emp	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4	0.4	2.1
Incinerators											
Rail/Air											
Auto exhaust	23.1x10 ⁶ VMT	3.5	1.8	0.6	0.6	0.6	1.8	2.1	0.3	3.8	15.1
INDUS PROCESSES:											
Ind processes	1 source	2.0									2.0
FUGITIVE DUST:											
Railroad yards											
Clean streets	23.1x10 ⁶ VMT	20.0	10.4	3.5	3.5	3.5	10.4	12.2	1.7	21.7	86.9
Comm streets											
Unpaved roads	23 driveways	0.3									
Cleared areas	3 ac	0.2									0.2
Construction	2 ac			4.0							4.0
Agriculture											
Storage areas	2 ac	2.1		2.1							4.2
Unpaved pkg lots	0.2 ac	0.1									0.1

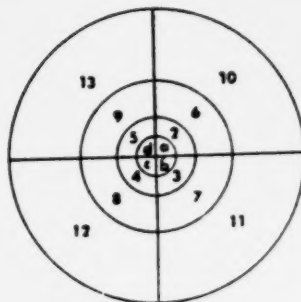
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	3.8	4.8	12.0	20.6	
IND PROCESSES	2.0			2.0	
FUGITIVE DUST	22.7	27.0	46.0	95.7	
Total	28.5	31.8	58.0	118.3	

DESCRIPTION OF SITE

SAROAD code - 26 2380 015 H01

Location - 9445 Holmes, Kansas City,
Missouri

Monitor height - 20 ft, on roof of
fire station



Land use, by sector -

1a undeveloped	6 light industry
1b light residential	7 dense residential
1c light residential	8 dense residential
1d undeveloped	9 dense residential
2 light industry	10 dense residential
3 undeveloped	11 light residential
4 dense residential	12 dense residential
5 dense residential	13 dense residential

Topography - no special terrain

Localized sources, within 200 ft of monitor -

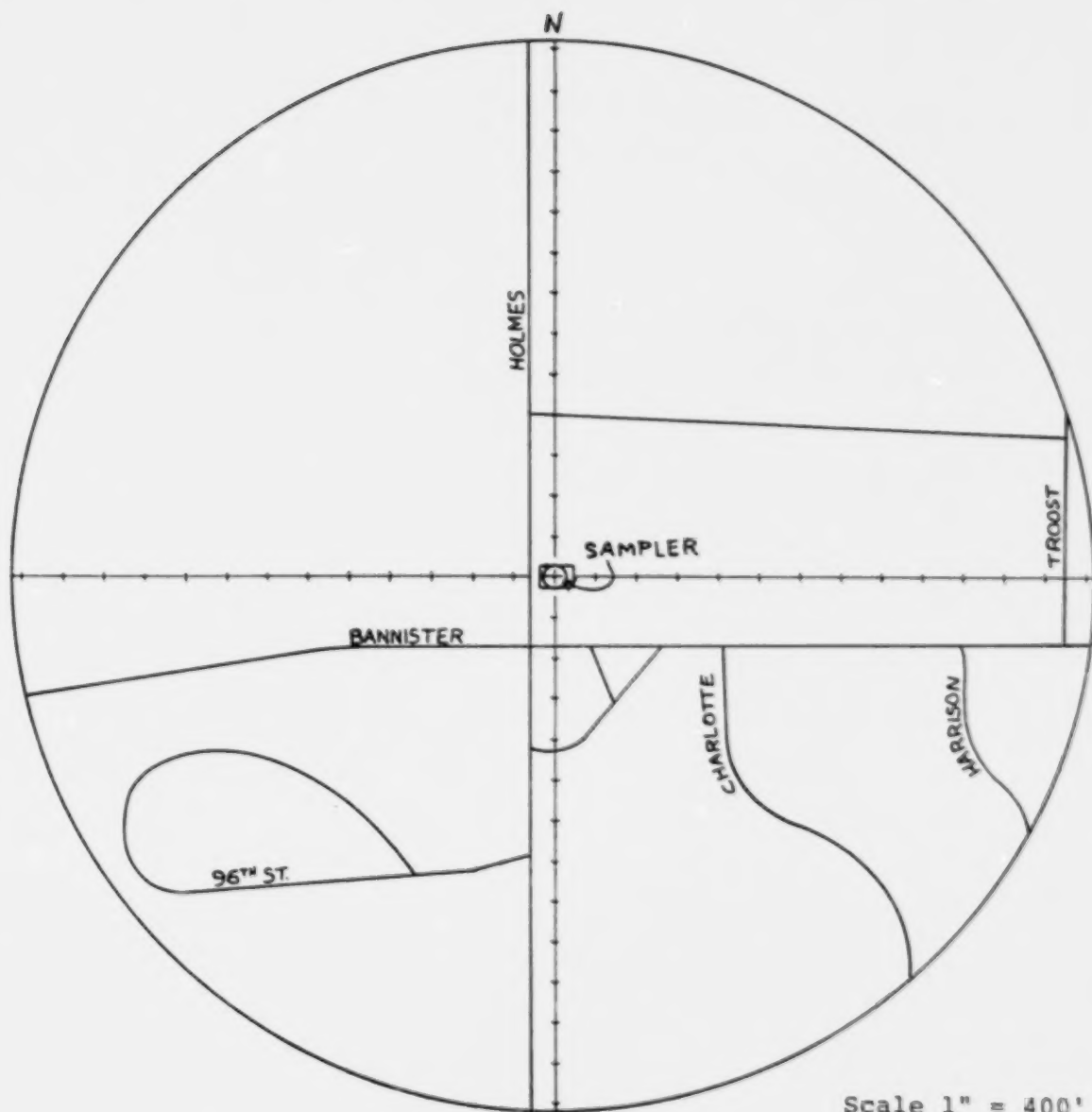
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Holmes Street	66 ft	13,390 ADT, clean, curved
Bannister Road	175 ft	16,100 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	74	-
1976	82	47
1975	75	54
1974	59	24
1973	-	-



One mile radius around 9445 Holmes site.



One-quarter mile radius around 9445 Holmes site.



Viewed to the north-northeast.



Viewed to the south-southeast.

Sampler at 9445 Holmes.

POINT SOURCE SUMMARY

Site: 9445 Holmes

<u>Plant number</u>	<u>Emission level, t/yr</u>	<u>Distance from site, mi</u>	<u>Compass direction, °</u>
64	50	.38	175
63	252	2.3	170

AREA SOURCE SUMMARY

Site: 9445 Holmes

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	11957 pop	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	3.4
Comm/Ind fuel	9906 emp	0.6	0.5	0.5	0.5	0.5	1.9	1.9	1.9	1.9	10.2
Incinerators											
Rail/Air											
Auto exhaust	39.4x10 ⁶ VMT	4.7	1.0	1.0	2.1	0.8	2.1	2.1	7.0	5.2	26.0
INDUS PROCESSES:											
Ind processes	1 source						1.0				1.0
FUGITIVE DUST:											
Railroad yards											
Clean streets	39.4x10 ⁶ VMT	26.6	5.9	5.9	11.8	4.5	11.8	11.8	39.9	29.5	147.7
Comm streets											
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas											
Unpaved pkg lots											

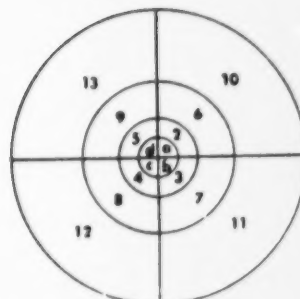
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	5.5	7.7	26.4	39.6	
IND PROCESSES			1.0	1.0	
FUGITIVE DUST	26.6	28.1	93.0	147.7	
Total	32.1	35.8	120.4	188.3	

DESCRIPTION OF SITE

SAROAD code - 26 1840001 H01

Location - 709 Main Street,
Grandview, Missouri

Monitor height - 15 ft, on roof of
fire station



Land use, by sector -

1a light residential	6 light residential
1b light residential	7 dense residential
1c light residential	8 light residential
1d light residential	9 light residential
2 dense residential	10 dense residential
3 dense residential	11 light residential
4 dense residential	12 undeveloped
5 light industry	13 light residential

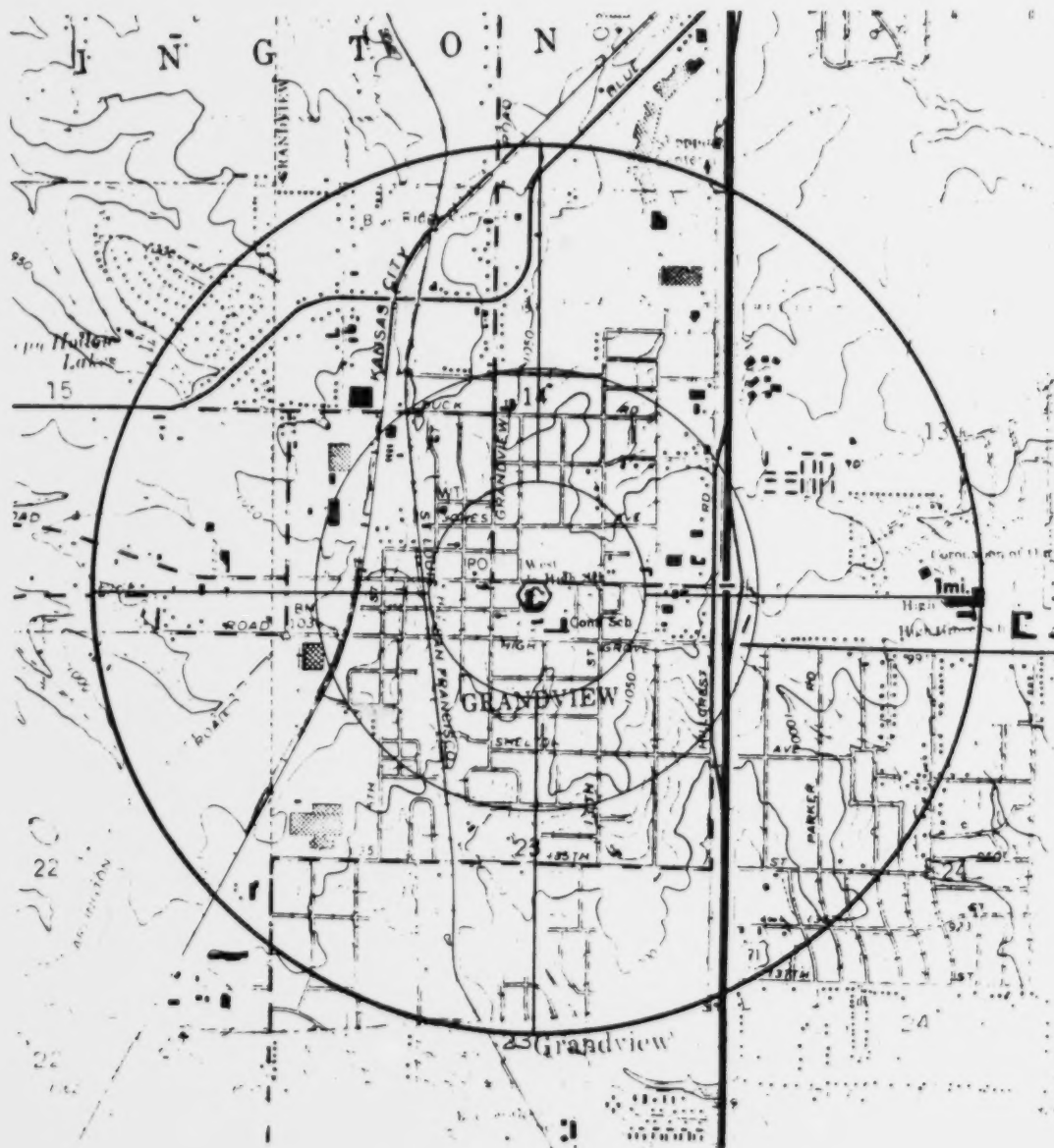
Topography - no special terrain

Localized sources, within 200 ft of monitor -

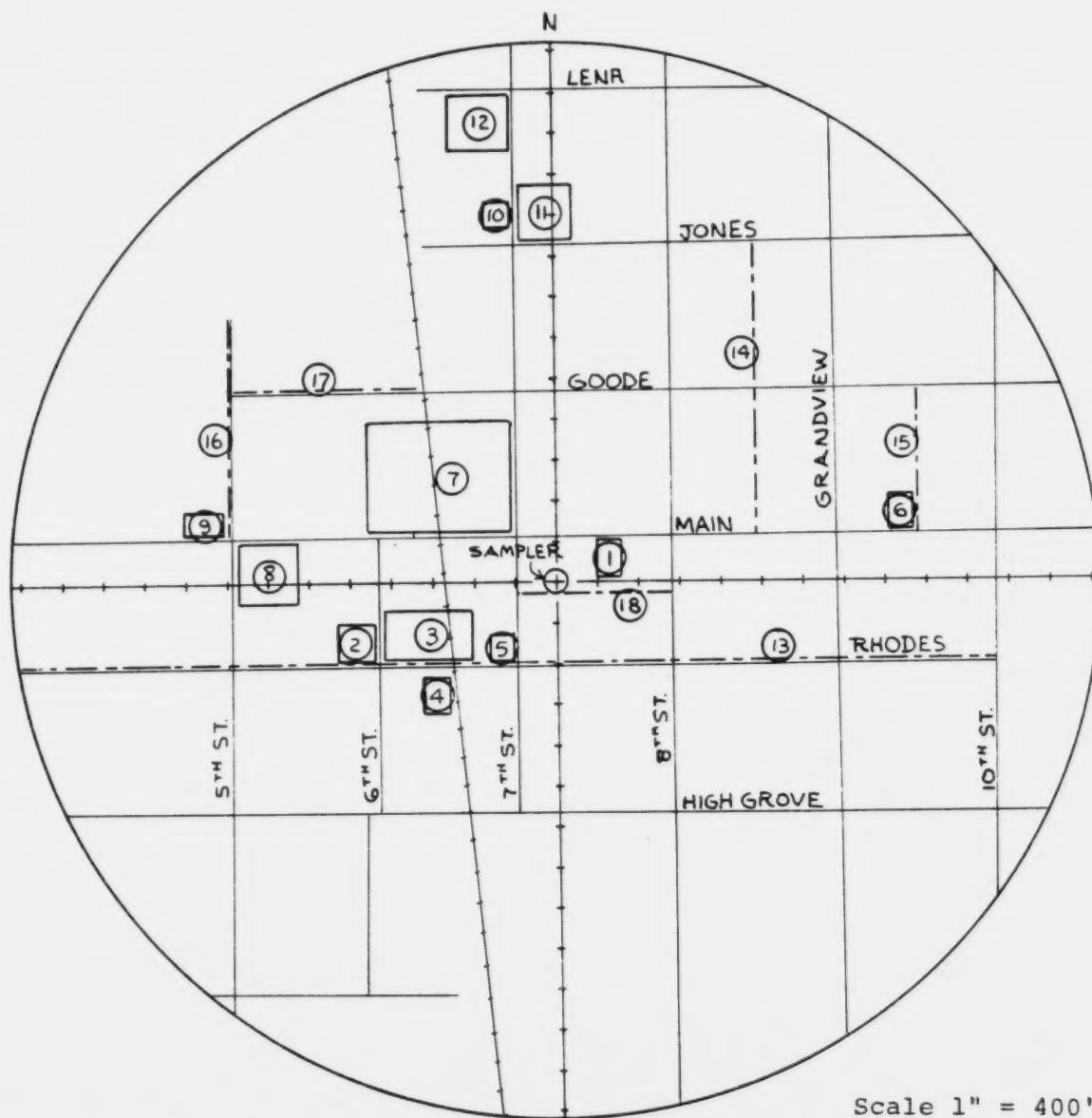
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Seventh Street	87 ft	200 ADT, clean, uncurbed
Main Street	102 ft	2800 ADT, clean, curbed
Unpaved alley	10 ft	10 cars
Unpaved parking lot	110 ft	0.1 acres, 10 cars

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	61	10
1975	64	37
1974	71	28
1973	82	37



One mile radius around 709 Main Street site.



- | | |
|---------------------------------------|------------------------------------|
| 1,2. Unpaved pkg lot, 0.1 ac, 10 cars | 12. Cleared area, 0.5 ac |
| 3. Unpaved pkg lot, 0.9 ac, 40 cars | 13. Unpaved road, 2000 ft, 50 cars |
| 4,6. Unpaved pkg lot, 0.1 ac, 15 cars | 14. Unpaved alley, 650 ft, 5 cars |
| 5,10. Unpaved pkg lot, 0.1 ac, 5 cars | 15. Unpaved alley, 350 ft, 5 cars |
| 7. Cleared area, 4 ac | 16. Unpaved road, 650 ft, 10 cars |
| 8. Unpaved storage area, 0.5 ac | 17. Unpaved road, 400 ft, 10 cars |
| 9. Cleared area, 0.1 ac | 18. Unpaved alley, 400 ft, 10 cars |
| 11. Unpaved storage area, 0.5 ac | |

One-quarter mile radius around 709 Main Street site.



Viewed to the west.



Viewed to the east.

Sampler at 709 Main Street.

POINT SOURCE SUMMARY

Site: 709 Main Street

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
63	252	5.0	350

AREA SOURCE SUMMARY

Site: 709 Main Street

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	6732 pop	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4	0.4	2.1
Comm/Ind fuel	3707 emp	0.2	0.2	0.2	0.2	0.2	0.7	0.7	0.7	0.7	3.8
Incinerators											
Rail/Air											
Auto exhaust	34.5x10 ⁶ VMT	1.8	0.4	0.7	0.7	0.2	8.2	8.0	1.6	1.1	22.7
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards	11 ac	0.3				0.2			0.2	0.4	1.1
Clean streets	34.5x10 ⁶ VMT	10.4	2.6	3.8	3.8	1.2	46.5	45.3	9.0	6.4	129.0
Comm streets											
Unpaved roads	7800 VMT/yr	10.9									10.9
Cleared areas	4.6 ac	0.3									0.3
Construction											
Agriculture											
Storage areas	11 ac	0.2								21.0	21.2
Unpaved pkg lots	1.7 ac	0.6			0.2						0.8

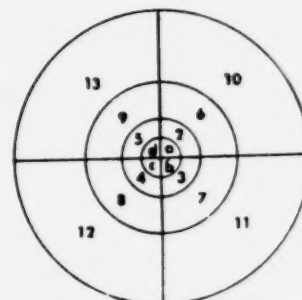
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	2.1	3.2	23.3	28.6	
IND PROCESSES					
FUGITIVE DUST	22.7	11.8	128.8	163.3	
Total	24.8	15.0	152.1	191.9	

DESCRIPTION OF SITE

SAROAD code - 26 4260 002 F01

Location - Belt and Frederick Street,
St. Joseph, Missouri

Monitor height - 25 ft, on roof of
building in shopping center



Land use, by sector -

1a suburb commercial	6 light residential
1b suburb commercial	7 undeveloped
1c suburb commercial	8 undeveloped
1d suburb commercial	9 light residential
2 suburb commercial	10 undeveloped
3 suburb commercial	11 undeveloped
4 suburb commercial	12 dense residential
5 suburb commercial	13 dense residential

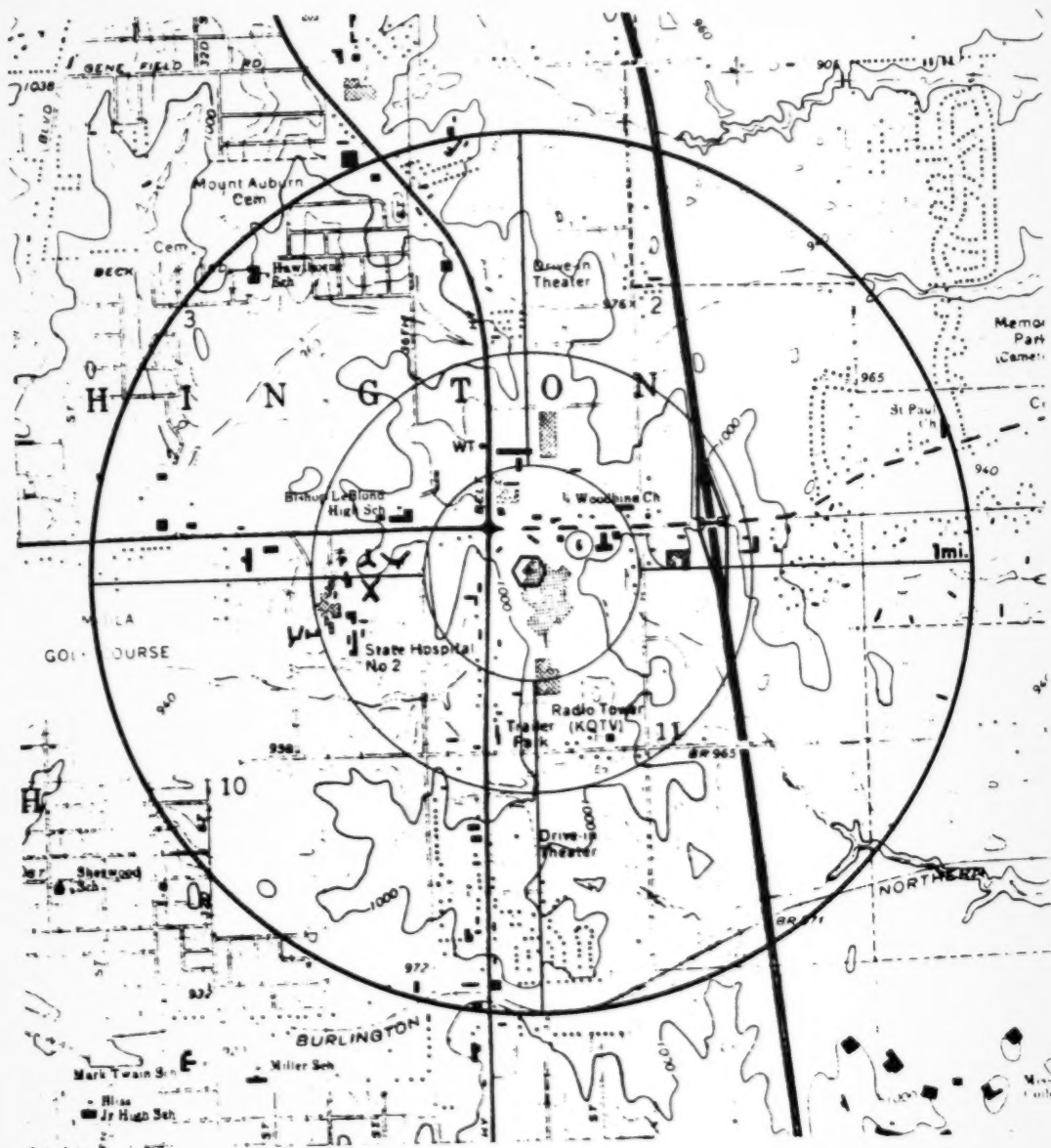
Topography - no special terrain

Localized sources, within 200 ft of monitor -

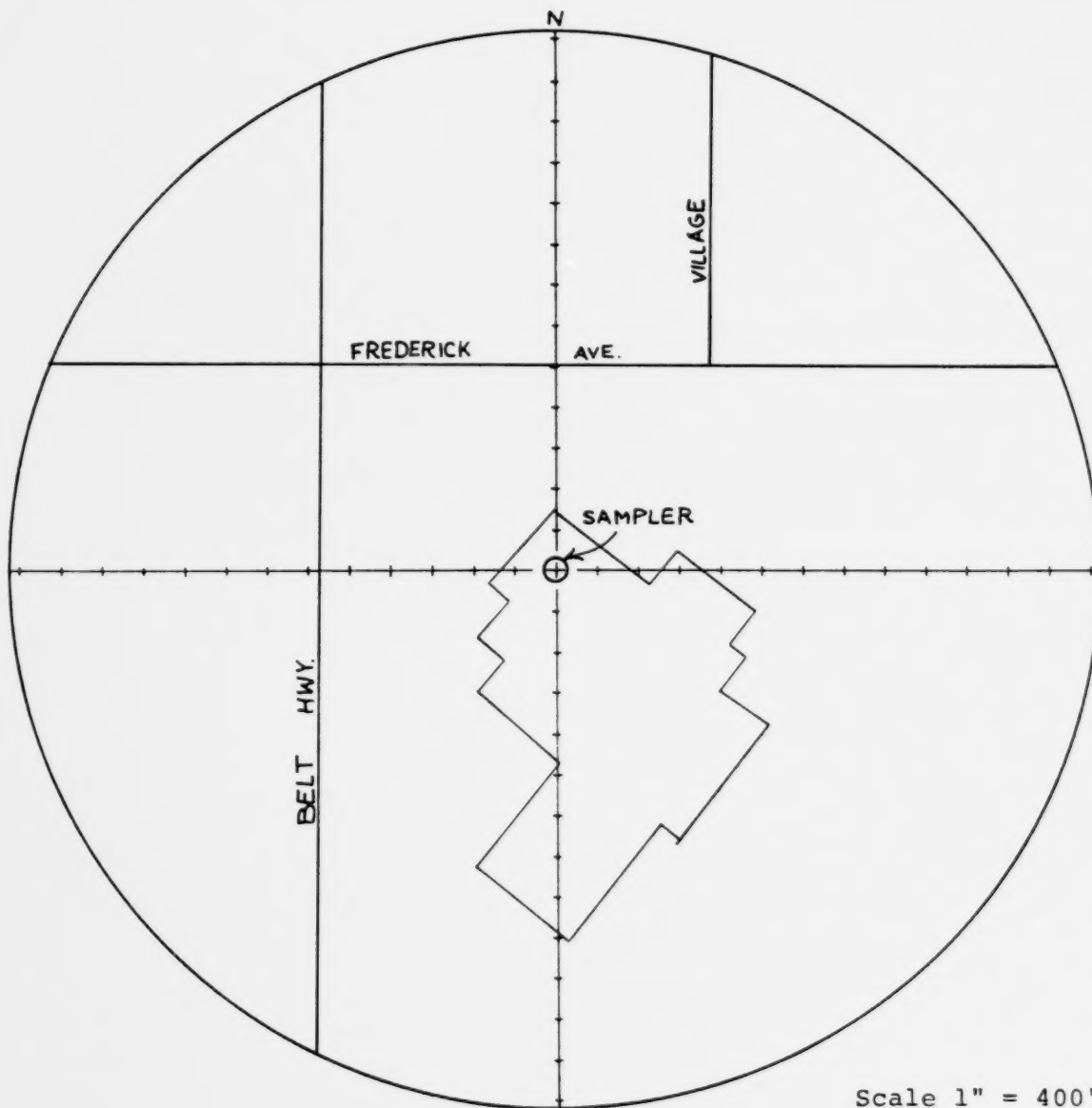
<u>Source</u>	<u>Distance</u>	<u>Description</u>
None		

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	83	61
1975	75	56
1974	71	57
1973	80	30



One mile radius around Belt and Frederick Streets' site.



One-quarter mile radius around Belt and Frederick Streets' site.



Viewed to the east-southeast.



Viewed to the west-southwest.

Sampler at Belt and Frederick Streets.

POINT SOURCE SUMMARY

Site: Belt and Fredrick Streets

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
47	498	4.3	247
46	675	4.8	210

AREA SOURCE SUMMARY

Site: Belt and Frederick Streets

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel											
Comm/Ind fuel											
Incinerators											
Rail/Air											
Auto exhaust	40.0x10 ⁶ VMT	4.9	3.3	1.1	1.1	2.3	3.0	3.6	2.3	4.9	26.5
INDUS PROCESSES:											
Ind processes	1 source				1.0				1.0		2.0
FUGITIVE DUST:											
Railroad yards											
Clean streets	40.0x10 ⁶ VMT	27.6	18.6	6.5	6.3	13.1	17.2	20.1	13.1	27.4	149.9
Comm streets											
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas											
Unpaved pkg lots	15.3 ac								6.0	6.0	12.0

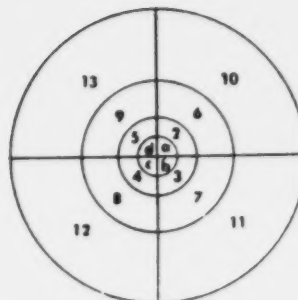
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	4.9	7.8	13.8	26.5
IND PROCESSES		1.0	1.0	2.0
FUGITIVE DUST	27.6	44.5	89.8	161.9
Total	32.5	53.3	104.6	190.4

DESCRIPTION OF SITE

SAROAD code - 26 H260 003 F01

Location - Eighth and Edmond Street,
St. Joseph, Missouri

Monitor height - 40 ft, on roof of
post office



Land use, by sector -

1a central commercial	6 dense residential
1b dense residential	7 dense residential
1c central commercial	8 light industry
1d central commercial	9 dense residential
2 dense residential	10 dense residential
3 dense residential	11 dense residential
4 dense residential	12 light residential
5 dense residential	13 light residential

Topography - elevated receptor

Localized sources, within 200 ft of monitor -

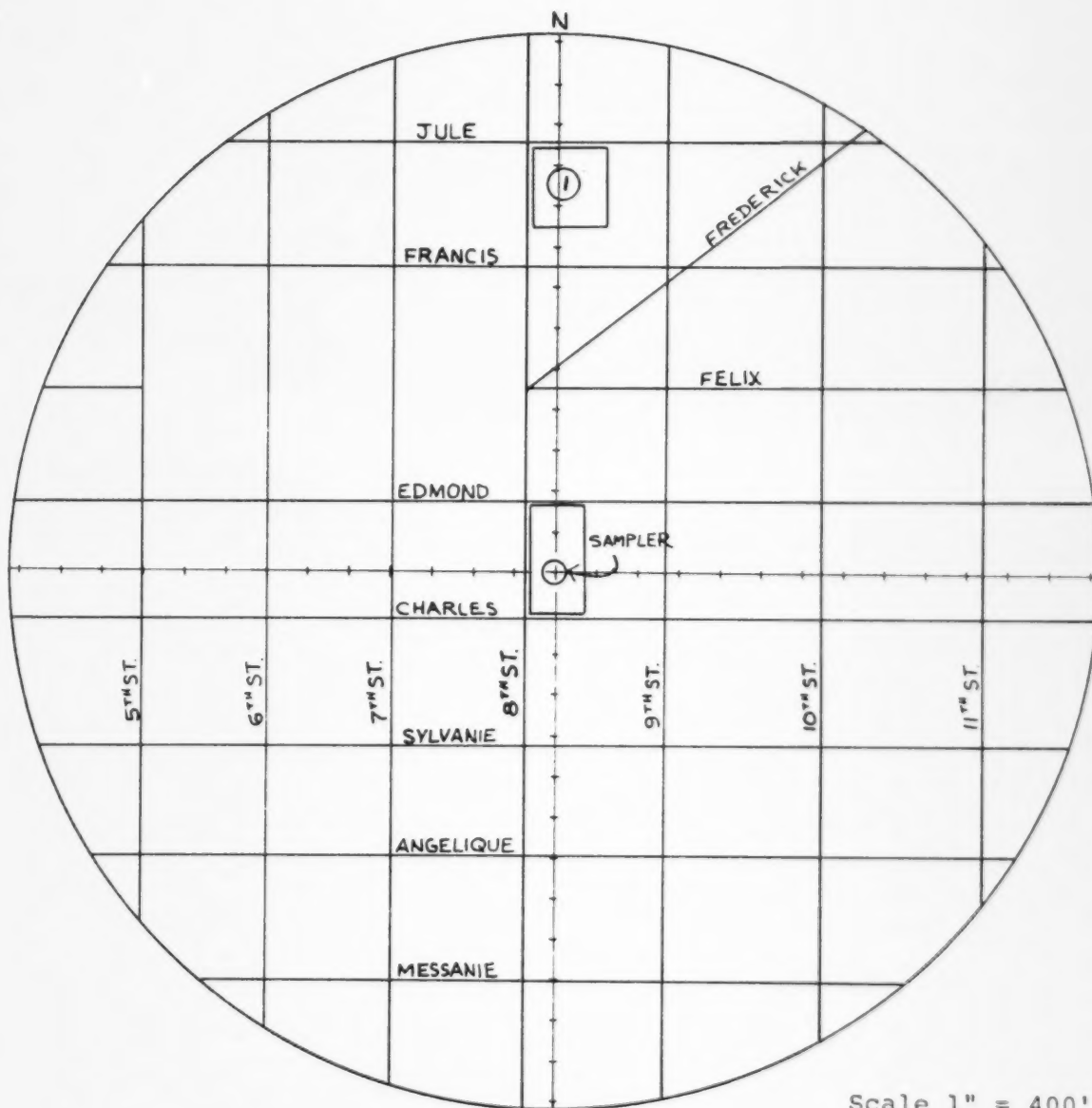
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Eighth Street	75 ft	6600 ADT, clean, curbed
Charles Street	110 ft	200 ADT, clean, curbed
Edmond Street	170 ft	2800 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	82	61
1975	81	55
1974	71	56
1973	74	25



One mile radius around Eighth and Edmond Streets' site.



1. Unpaved lot, 0.9 acres, 30 cars

One-quarter mile radius around Eighth and Edmond Streets' site.



Viewed to the west.



Viewed to the south-southeast.

Sampler at Eighth and Edmond Streets.

POINT SOURCE SUMMARY

Site: Eighth and Edmond Streets

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction,°
46	675	.54	300
47	498	.73	168
51	172	2.0	180
52	342	2.7	245
53	294	3.6	263
49	333	4.6	205

AREA SOURCE SUMMARY

Site: Eighth and Edmond Streets

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel											
Comm/Ind fuel											
Incinerators											
Rail/Air											
Auto exhaust	30x10 ⁶ VMT	1.8	1.2	1.2	0.8	1.2	5.1	5.1	0.8	2.6	19.8
INDUS PROCESSES:											
Ind processes	4 sources					14.0			29.0		43.0
FUGITIVE DUST:											
Railroad yards	37 ac										
Clean streets	30x10 ⁶ VMT	10.1	6.7	6.7	4.5	6.7	29.3	29.3	4.5	1.0	3.7
Comm streets										14.6	112.4
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas	4 ac, aggregate				4.2						
Unpaved pkg lots	1.7 ac	0.3		0.4	0.3			4.2			8.4
											1.0

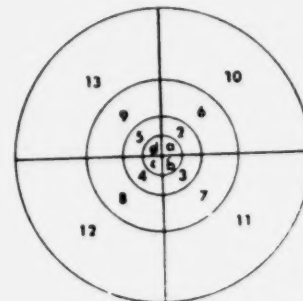
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	1.8	4.4	13.6	19.8	
IND PROCESSES		14.0	29.0	43.0	
FUGITIVE DUST	10.4	29.5	85.6	125.5	
Total	12.2	47.9	128.2	188.3	

DESCRIPTION OF SITE

SAROAD code - 26 3740 001 F01

Location - Waterworks, Platte City,
Missouri

Monitor height - 17 ft, on the
waterworks facility



Land use, by sector -

1a dense residential	6 undeveloped
1b light residential	7 light residential
1c undeveloped	8 undeveloped
1d undeveloped	9 light residential
2 light residential	10 undeveloped
3 light residential	11 undeveloped
4 undeveloped	12 undeveloped
5 undeveloped	13 undeveloped

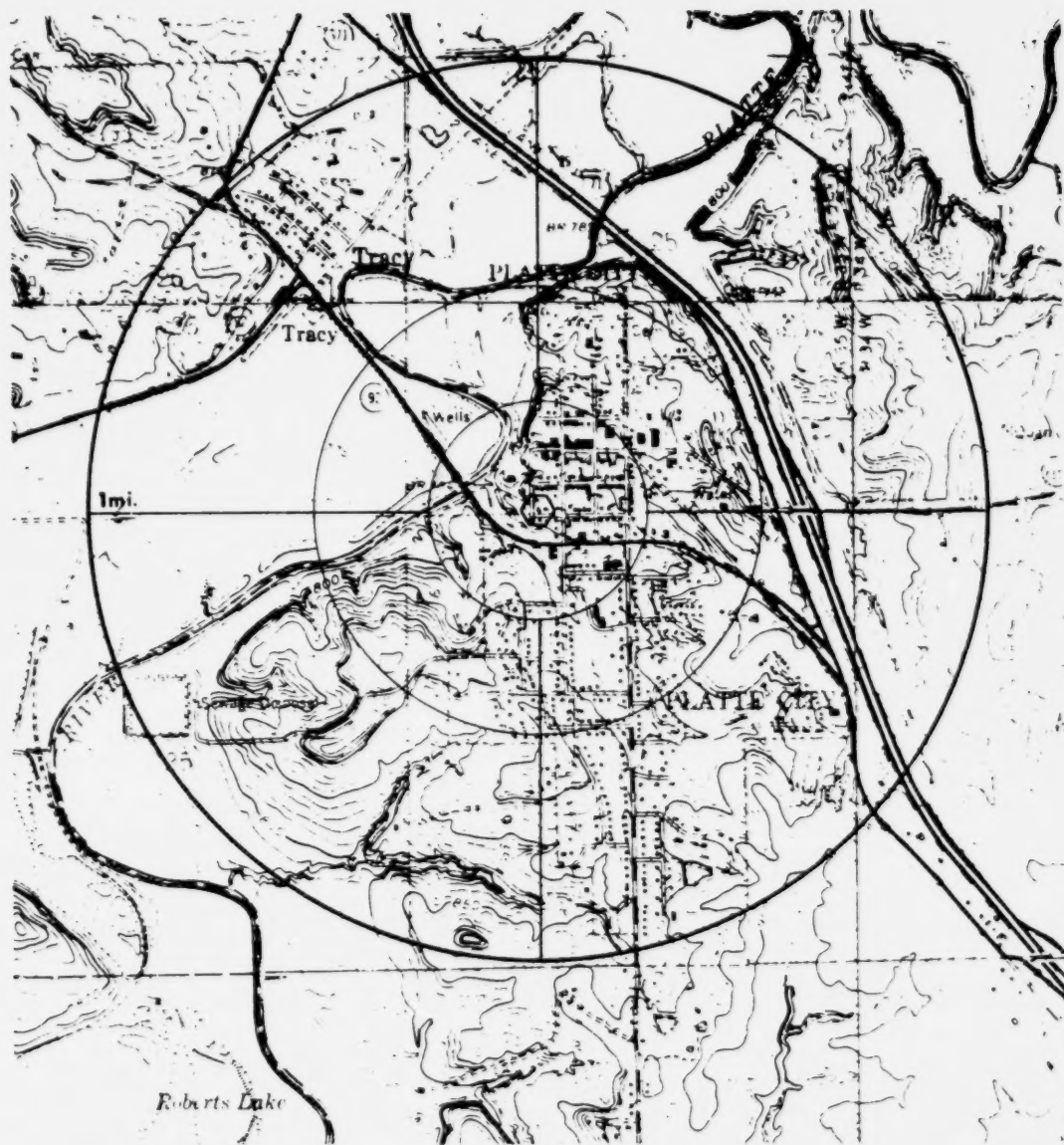
Topography - no special terrain

Localized sources, within 200 ft of monitor -

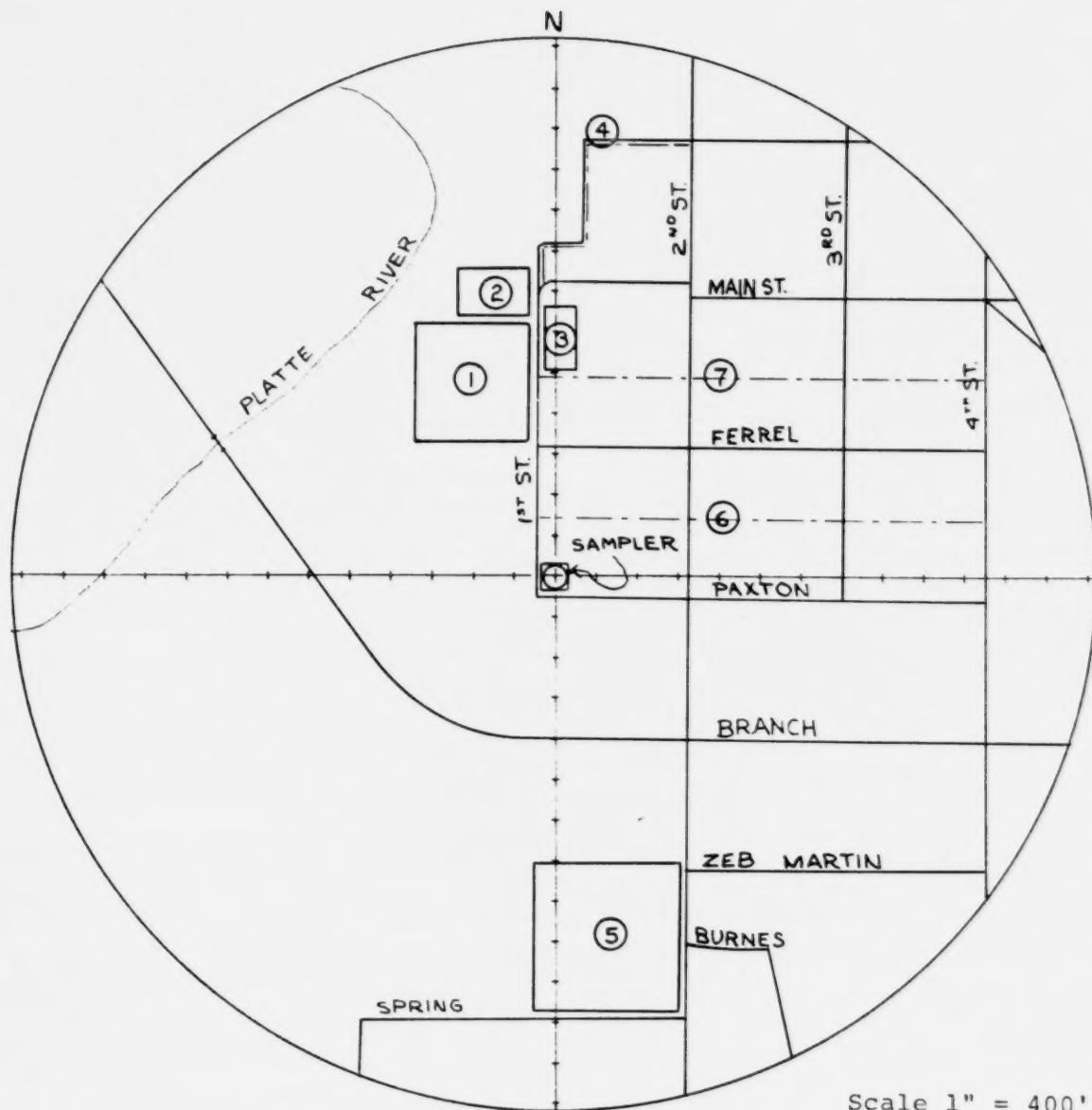
<u>Source</u>	<u>Distance</u>	<u>Description</u>
First Street	75 ft	20 ADT, dirty, uncurbed
Paxton Street	60 ft	20 ADT, dirty, uncurbed
Alley	150 ft	5 ADT, unpaved

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	69	60
1975	56	54
1974	69	58
1973	77	49



One mile radius around Waterworks, Platte City site.



Scale 1" = 400'

1. Unpaved lot, 1.4 acres, 25 cars
2. Unpaved lot, 0.3 acres, 10 cars
3. Aggregate storage, 0.2 acres
4. Unpaved road, 700 feet, 5 cars
5. Cleared area, 2.8 acres
6. Unpaved alley, 1100 feet, 10 cars
7. Unpaved alley, 1100 feet, 5 cars

One-quarter mile radius around Waterworks, Platte City site.



Viewed to the north.



Viewed to the west-northwest.

Sampler at Waterworks, Platte City.

POINT SOURCE SUMMARY

Site: Platte City Water Works

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
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There are no point sources
within 5 mi of this site.

AREA SOURCE SUMMARY

Site: Waterworks, Platte City

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	574 emp										
Comm/Ind fuel	140 pop										neg
Incinerators											neg
Rail/Air											
Auto exhaust	10.4x10 ⁶ VMT	0.3		0.1		0.1	2.9	2.1		1.2	6.7
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards											
Clean streets	10.4x10 ⁶ VMT	2.0		0.8		0.8	16.4	12.1		7.0	39.1
Comm streets											
Unpaved roads	1.3 mi	0.8							0.6		1.5
Cleared areas	2.8 ac	0.2									0.2
Construction											
Agriculture											
Storage areas	0.2 ac, aggregate	0.4									0.4
Unpaved pkg lots	1.7 ac	0.4									0.4

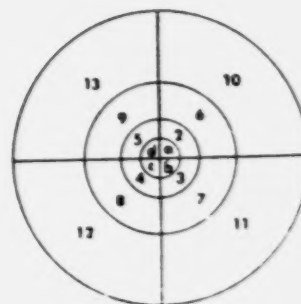
Recap	Emissions by sector, t/yr					
	1	2-5	6-9	Total		
COMBUSTION	0.3	0.2	6.2	6.7		
IND PROCESSES						
FUGITIVE DUST	3.8	1.7	36.1	41.6		
Total	4.1	1.9	42.3	48.3		

DESCRIPTION OF SITE

SAROAD code - 26 3380 023 H01

Location - 11500 North 71 Highway,
Kansas City, Missouri

Monitor height - 25 ft, on roof of
radio transmitter building



Land use, by sector -

1a undeveloped	6 undeveloped
1b undeveloped	7 airport (KCI)
1c light industry	8 airport (KCI)
1d light industry	9 airport (KCI)
2 undeveloped	10 undeveloped
3 undeveloped	11 undeveloped
4 airport (KCI)	12 undeveloped
5 light industry	13 undeveloped

Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
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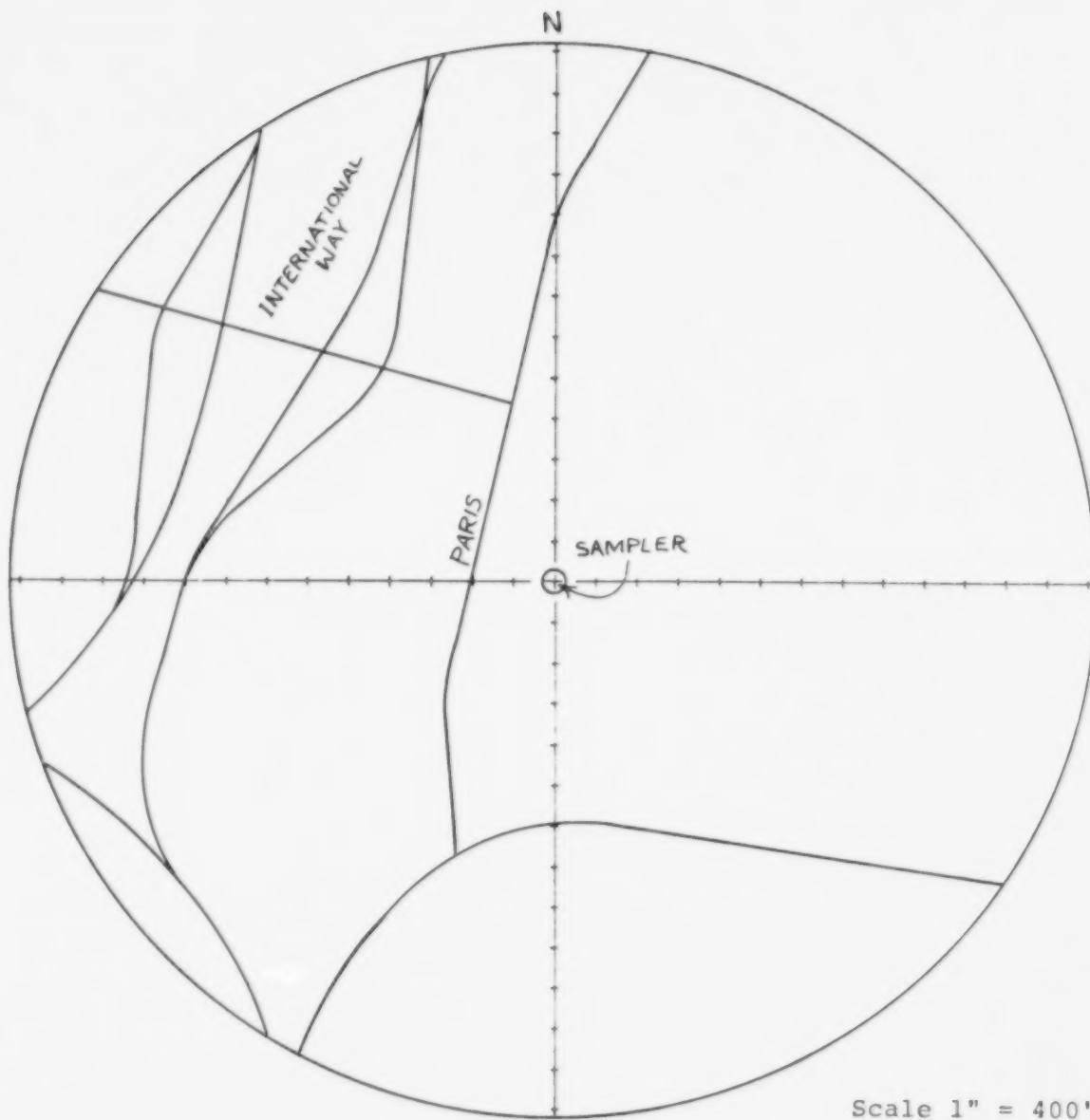
None

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1977	42	-
1976	50	48
1975	49	54
1974	45	48
1973	53	56



One mile radius around 11500 North 71 Highway site.



One-quarter mile radius around 11500 North 71 Highway site.



Viewed to the south-southeast.



Viewed to the southeast.

Sampler at 11500 North 71 Highway.

POINT SOURCE SUMMARY

Site: 11500 North 71 Highway

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction,°
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There are no point sources
within 5 mi of this site.

AREA SOURCE SUMMARY

Site: 11500 North 71 Highway

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	24 pop										
Comm/Ind fuel	2139 emp						0.1	0.1	0.1	0.1	neg
Incinerators											0.4
Rail/Air											
Auto exhaust	12.5x10 ⁶ VMT	1.7	0.7		2.6	0.5	2.6	10.0	20.0	11.0	41.0
INDUS PROCESSES:											
Ind processes											8.1
FUGITIVE DUST:											
Railroad yards											
Clean streets	12.5x10 ⁶ VMT	9.4	4.2		15.0	2.9	15.0				46.5
Comm streets											
Unpaved roads											
Cleared areas											
Construction	3 ac				14.0						14.0
Agriculture			1.1	1.1			2.1	2.1			6.4
Storage areas											
Unpaved pkg lots											

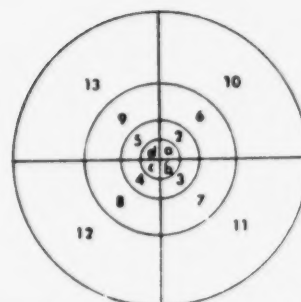
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	1.7	3.8	44.0	49.5
IND PROCESSES				
FUGITIVE DUST	9.4	38.3	19.2	66.9
Total	11.1	42.1	63.2	116.4

DESCRIPTION OF SITE

SAROAD code - 17 1800 011 H01

Location - 3105 Fairfax, Kansas City,
Kansas

Monitor height - 24 ft, on roof of
fire station



Land use, by sector -

1a airport (Fairfax Municipal)	6 airport (Fairfax Municipal)
1b airport (Fairfax Municipal)	7 general industry
1c light industry	8 light industry
1d general industry	9 general industry
2 airport (Fairfax Municipal)	10 light residential
3 airport (Fairfax Municipal)	11 general industry
4 general industry	12 dense residential
5 general industry	13 light residential

Topography - no special terrain

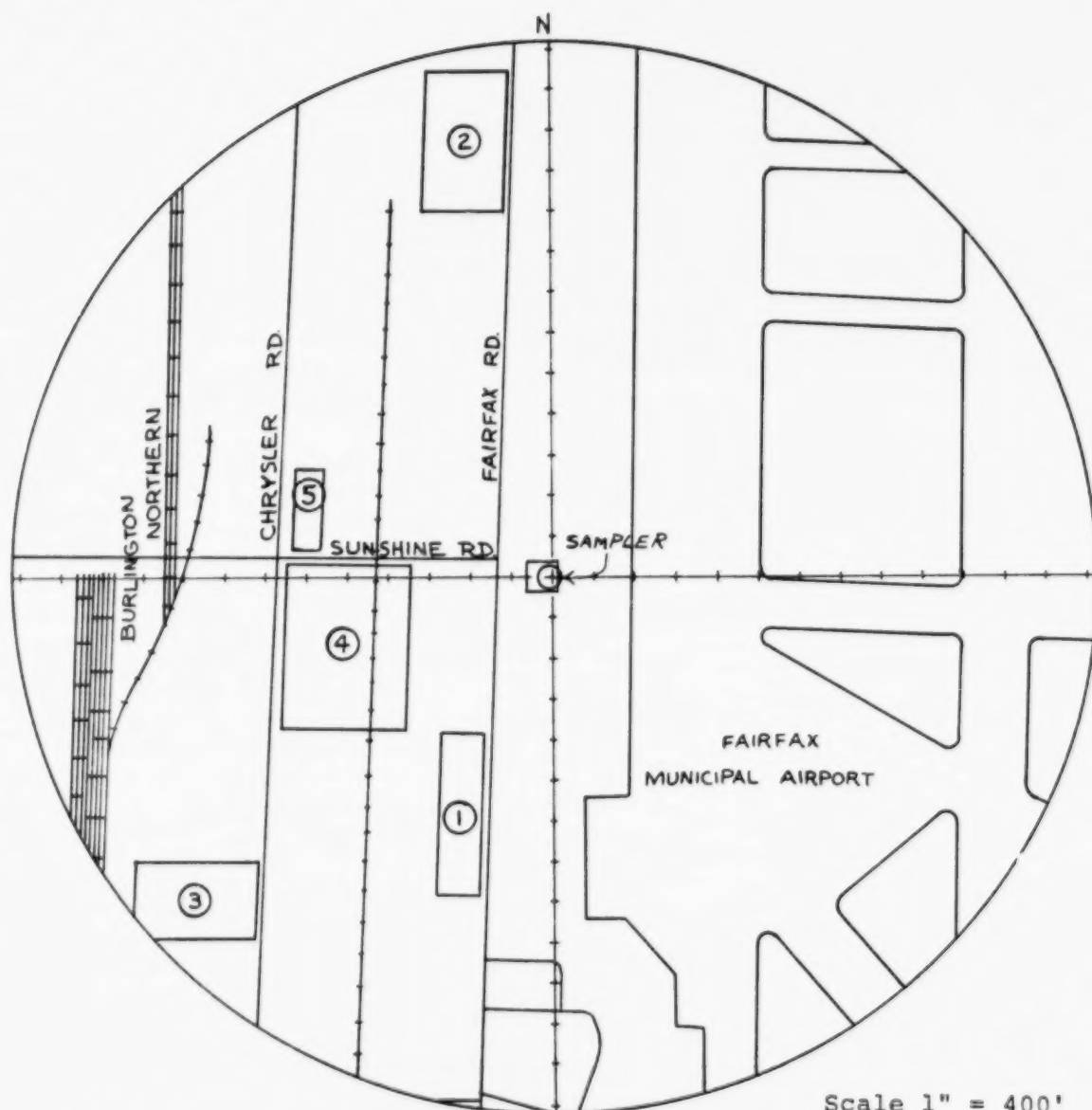
Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Fairfax Avenue	140 ft	21,210 ADT, clean, curbed
Sunshine Road	200 ft	4760 ADT, clean, uncurbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	119 ^a	42
1975	71	34
1974	71	57
1973	87	59

^a Site moved to present location at the end of 1975. Previous location was two blocks south.



Scale 1" = 400'

1. Unpaved lot, 0.9 acres, 150 cars
2. Unpaved lot, 1.6 acres, 20 trucks
3. Unpaved lot, 1.4 acres, 50 trucks
4. Unpaved lot, 2.8 acres, 60 trucks
5. Unpaved lot, 0.5 acres, 15 trucks

One-quarter mile radius around 3105 Fairfax site.



Viewed to the west-northwest.



Viewed to the east.

Sampler at 3105 Fairfax.

POINT SOURCE SUMMARY

Site: 3105 Fairfax

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
29	1,559	.28	305
30	1,030	.47	215
31	282	.55	210
32	449	.90	145
28	38	1.0	285
3	758	1.6	105
2	757	1.6	95
27	891	1.6	275
33	88	1.9	185
5	99	2.5	105
7	814	2.5	125
34	245	2.7	185
4	104	2.7	95
6	104	2.8	95
10	737	2.8	145
11	28	3.2	155
8	15	3.2	120
9	46	3.4	120
42	65	4.4	205
41	89	4.4	210
40	43	4.5	215
39	72	4.6	210
43	785	4.7	205
12	65	4.8	175
13	341	4.9	110
44	40	5.0	195

AREA SOURCE SUMMARY

Site: 3105 Fairfax

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	1809 pop										
Comm/Ind fuel	14785 emp	2.2	1.8	1.8	1.8	1.8	7.2	7.2	7.2	0.1	0.4
Incinerators											
Rail/Air		0.8	0.2	0.9	1.2	1.0	0.7	1.6	3.3	3.2	12.9
Auto exhaust	19.4x10 ⁶ VMT	2.5			3.3	1.2		0.3	2.9	2.6	12.8
INDUS PROCESSES:											
Ind processes	1 source								1.0		1.0
FUGITIVE DUST:											
Railroad yards	69 ac	0.3		0.4	0.7	0.6		1.0	2.0	1.9	6.9
Clean streets	18.8x10 ⁶ VMT	14.1			19.1	6.4		1.4	13.4	16.2	70.6
Comm streets	0.6x10 ⁶ VMT								9.5		9.5
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas											
Unpaved pkg lots	7.2 ac	4.6									4.6

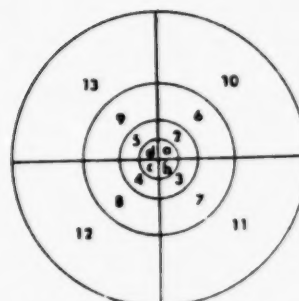
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	5.5	15.0	43.8	64.3
IND PROCESSES			1.0	1.0
FUGITIVE DUST	19.0	27.2	45.4	91.6
Total	24.5	42.2	90.2	156.9

DESCRIPTION OF SITE

SAROAD code - 17 1800 004 H01

Location - 2615 North 27th, Kansas City,
Kansas

Monitor height - 12 ft, on roof of
fire station



Land use, by sector -

1a undeveloped	6 dense residential
1b undeveloped	7 dense residential
1c dense residential	8 dense residential
1d dense residential	9 dense residential
2 dense residential	10 general industry
3 dense residential	11 dense residential
4 dense residential	12 dense residential
5 dense residential	13 light residential

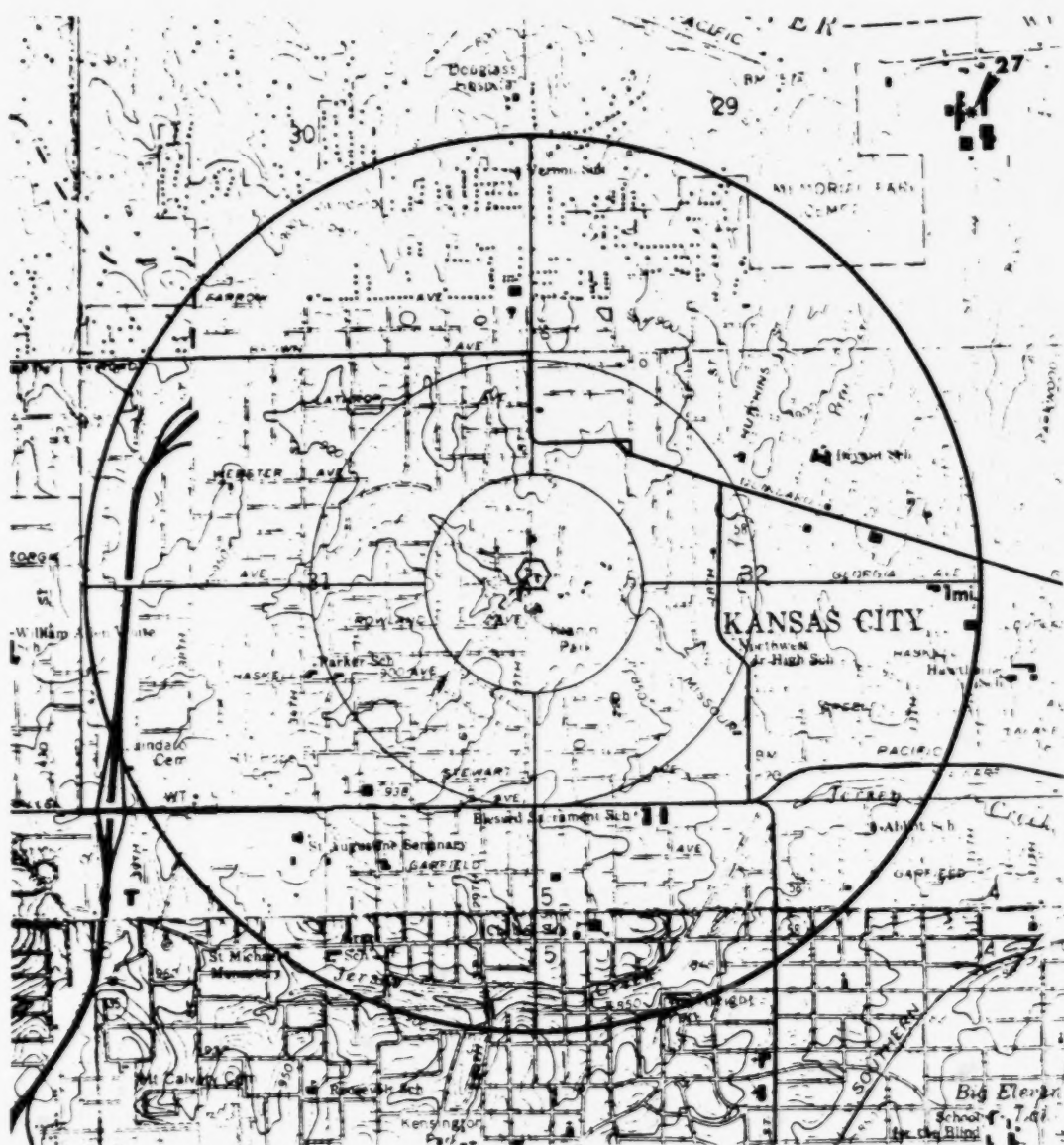
Topography - no special terrain

Localized sources, within 200 ft of monitor -

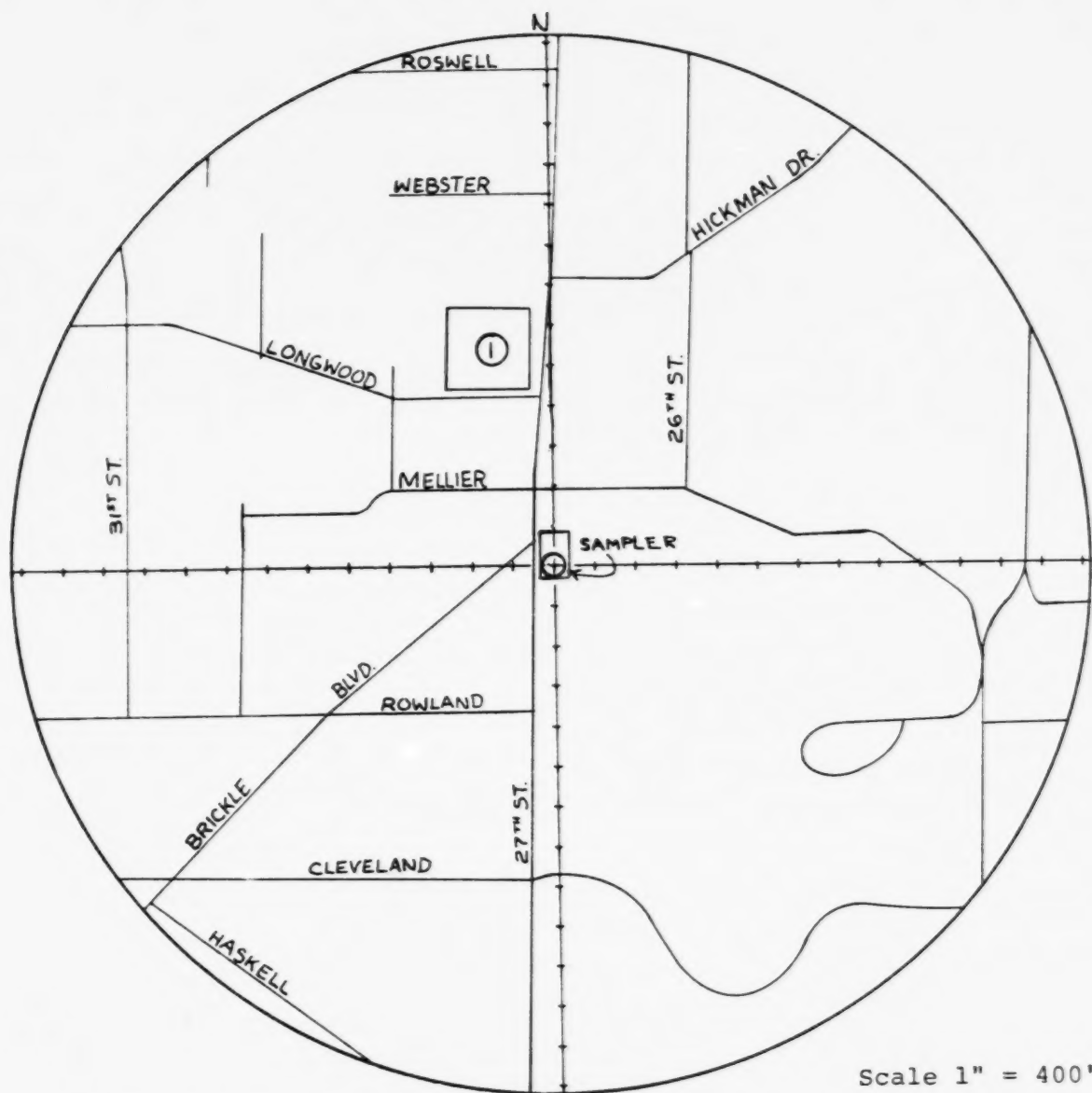
<u>Source</u>	<u>Distance</u>	<u>Description</u>
27th Street	58 ft	500 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	84	59
1975	74	55
1974	82	47
1973	87	59



One mile radius around 2615 North 27th site.



1. Cleared area, 1 acre

One-quarter mile radius around 2615 North 27th site.



Viewed to the north.



Viewed to the south.

Sampler at 2615 North 27th.

POINT SOURCE SUMMARY

Site: 2615 North 27th

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
27	891	1.5	45
28	38	1.9	55
30	1,030	2.4	80
31	282	2.4	85
29	1,559	2.6	70
34	245	2.8	110
40	43	3.0	180
32	449	3.1	90
33	88	3.1	125
41	89	3.2	170
39	72	3.3	175
42	65	3.3	170
43	785	3.4	175
38	107	3.5	190
37	451	3.8	205
2	757	4.2	80
3	758	4.2	85
44	40	4.2	165
36	26	4.5	220
11	28	4.8	120
10	737	4.8	115
7	814	4.9	100

AREA SOURCE SUMMARY

Site: 2615 North 27th

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	23474 pop	0.4	0.3	0.3	0.3	0.3	1.4	1.4	1.4	1.4	7.2
Comm/Ind fuel	1673 emp	0.3	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.8	4.3
Incinerators											
Rail/Air											
Auto exhaust	22.2x10 ⁶ VMT	0.3	1.2	1.0	0.9	0.3	2.2	2.0	4.7	2.0	14.6
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards											
Clean streets	22.2x10 ⁶ VMT	1.6	6.6	5.8	5.0	1.6	12.4	11.6	26.6	11.6	82.8
Comm streets											
Unpaved roads											
Cleared areas	1 ac	neg									
Construction											
Agriculture											
Storage areas											
Unpaved pkg lots											

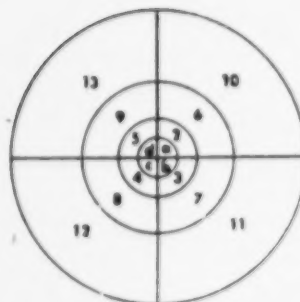
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	1.0	5.4	19.7	26.1
IND PROCESSES				
FUGITIVE DUST	1.6	19.0	62.2	82.8
Total	2.6	24.4	81.9	108.9

DESCRIPTION OF SITE

SAROAD code - 17 1800 001 H01

Location - 619 Ann Avenue, Kansas City,
Kansas

Monitor height - 45 ft, on roof of health
department building



Land use, by sector -

1a central commercial	6 general industry
1b dense residential	7 general industry
1c central commercial	8 dense residential
1d central commercial	9 dense residential
2 central commercial	10 general industry
3 dense residential	11 general industry
4 dense residential	12 general industry
5 central commercial	13 dense residential

Topography - no special terrain

Localized sources, within 200 ft of monitor -

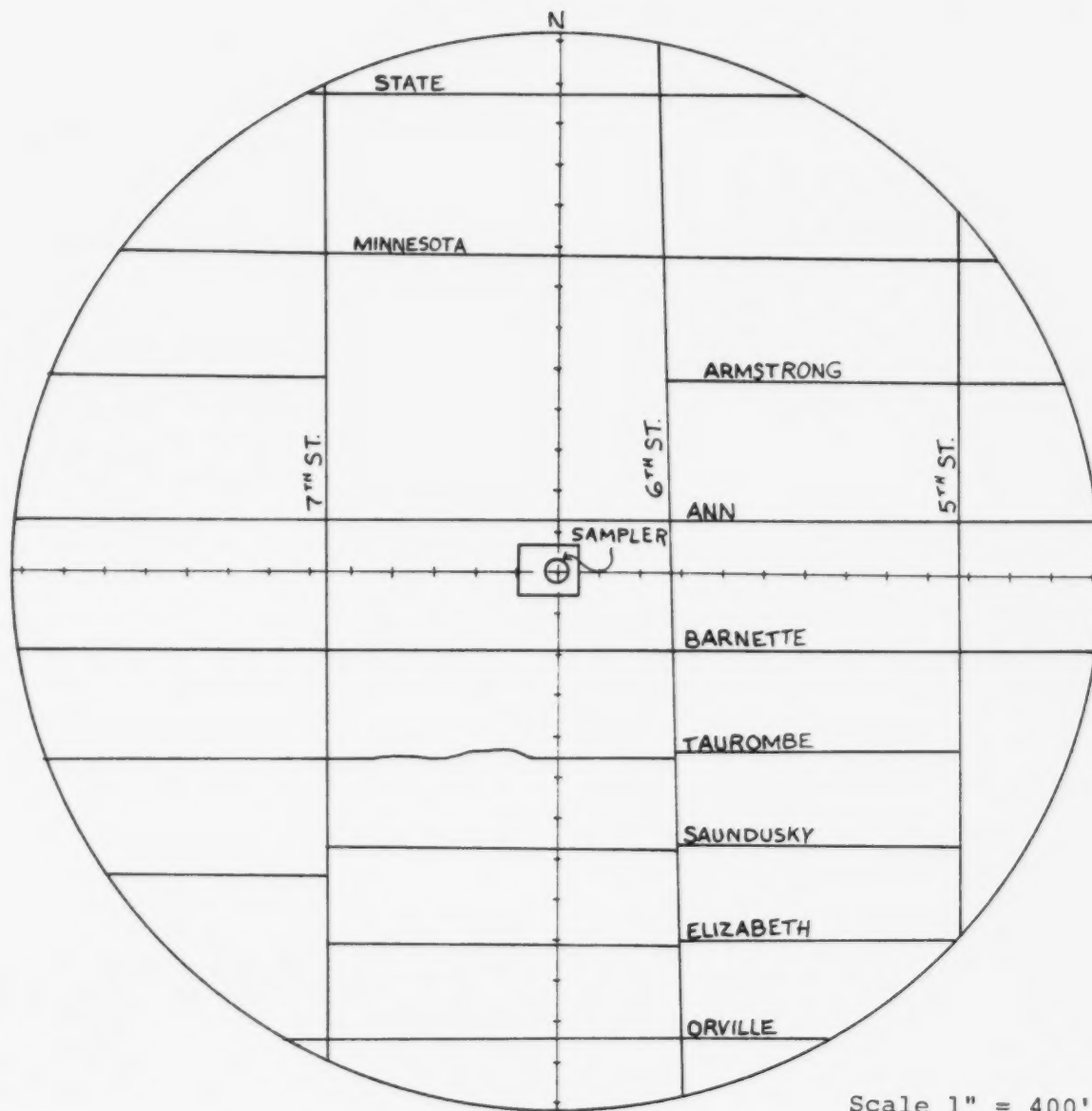
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Ann Avenue	130 ft	800 ADT, clean, curbed
Barnett Street	195 ft	800 ADT, clean, curbed

Air quality data -

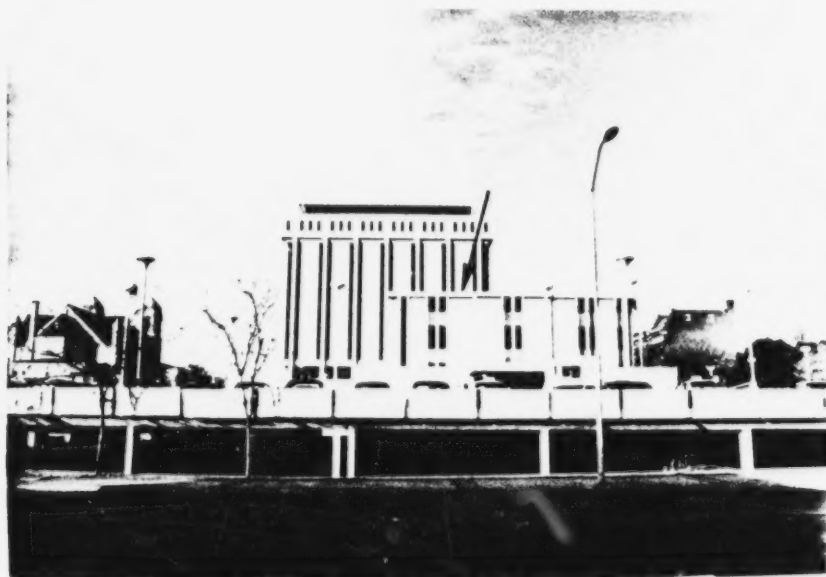
<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	90	58
1975	74	57
1974	64	50
1973	102	56



One mile radius around 619 Ann Avenue site.



One-quarter mile radius around 619 Ann Avenue site.



Viewed to the west.



Viewed to the north-northeast.

Sampler at 619 Ann Avenue.

POINT SOURCE SUMMARY

Site: 619 Ann Avenue

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
34	245	.68	130
33	88	.72	55
31	282	1.9	20
30	1,030	2.0	15
32	449	2.1	40
11	28	2.1	115
41	89	2.1	225
40	43	2.2	230
42	65	2.2	220
39	72	2.3	225
43	785	2.3	220
10	737	2.5	95
29	1,559	2.5	15
28	38	2.6	355
44	40	2.6	210
27	891	2.7	345
12	65	2.8	160
7	814	2.9	75
3	758	3.0	55
2	757	3.1	50
45	50	3.1	170
38	107	3.1	230
5	99	3.6	65
8	15	3.7	80
9	46	3.8	85
37	451	3.9	240
4	104	4.0	60
6	104	4.2	60

AREA SOURCE SUMMARY

Site: 619 Ann Avenue

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	19087 pop	0.3	0.3	0.3	0.3	0.3	1.1	1.1	1.1	1.1	5.9
Comm/Ind fuel	12947 emp	2.0	1.6	1.6	1.6	1.6	6.3	6.3	6.3	6.3	33.6
Incinerators	2				0.8		0.8				1.6
Rail/Air											
Auto exhaust	84.0x10 ⁶ VMT	3.3	2.8	7.2	1.1	2.8	1.7	23.4	5.0	8.3	55.6
INDUS PROCESSES:											
Ind processes	4 sources						19.0	15.0			34.0
FUGITIVE DUST:											
Railroad yards	48 ac										
Clean streets	81.5x10 ⁶ VMT	18.3	18.3	39.7	3.0	15.3	9.1	131.3	24.4	45.8	305.2
Comm streets	2.5x10 ⁶ VMT	4.1			4.1	2.0	4.1	2.0	12.4	12.4	41.1
Unpaved roads											
Cleared areas											
Construction	4.6 ac									12.1	12.1
Agriculture											
Storage areas	4 ac						8.4				8.4
Unpaved pkg lots	5.5 ac							10.0			10.0

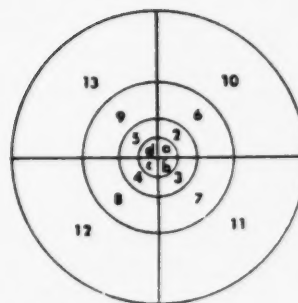
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	5.6	22.3	68.8	96.7	
IND PROCESSES			34.0	34.0	
FUGITIVE DUST	22.4	82.7	276.5	381.6	
Total	28.0	105.0	379.3	512.3	

DESCRIPTION OF SITE

SAROAD code - 17 1800 002 H01

Location - Baltimore and Miami, Kansas
City, Kansas

Monitor height - 15 ft, on roof of
Morse School



Land use, by sector -

1a dense residential	6 light industry
1b light industry	7 light industry
1c light industry	8 light industry
1d dense residential	9 general industry
2 dense residential	10 general industry
3 light industry	11 light industry
4 general industry	12 dense residential
5 dense residential	13 general industry

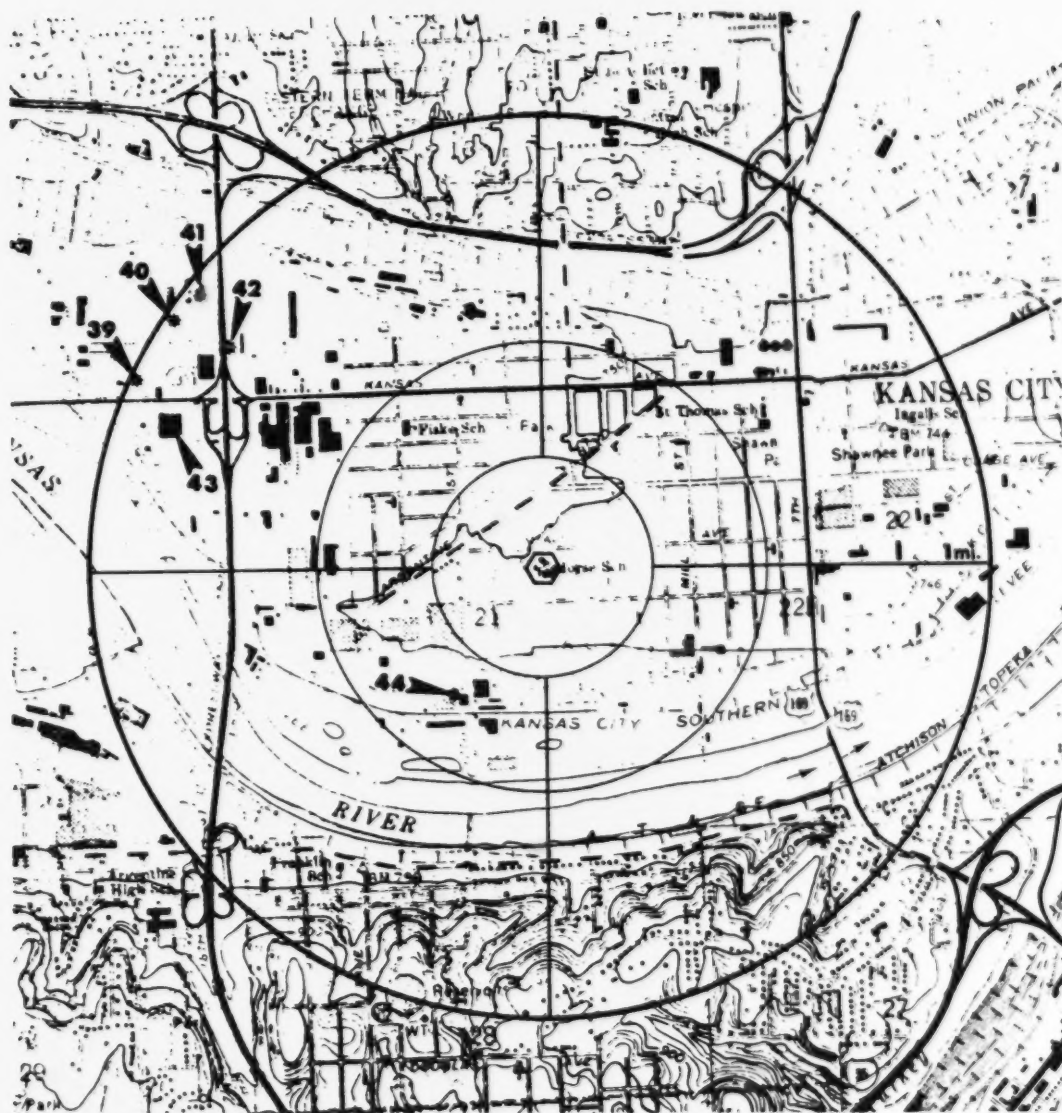
Topography - no special terrain

Localized sources, within 200 ft of monitor -

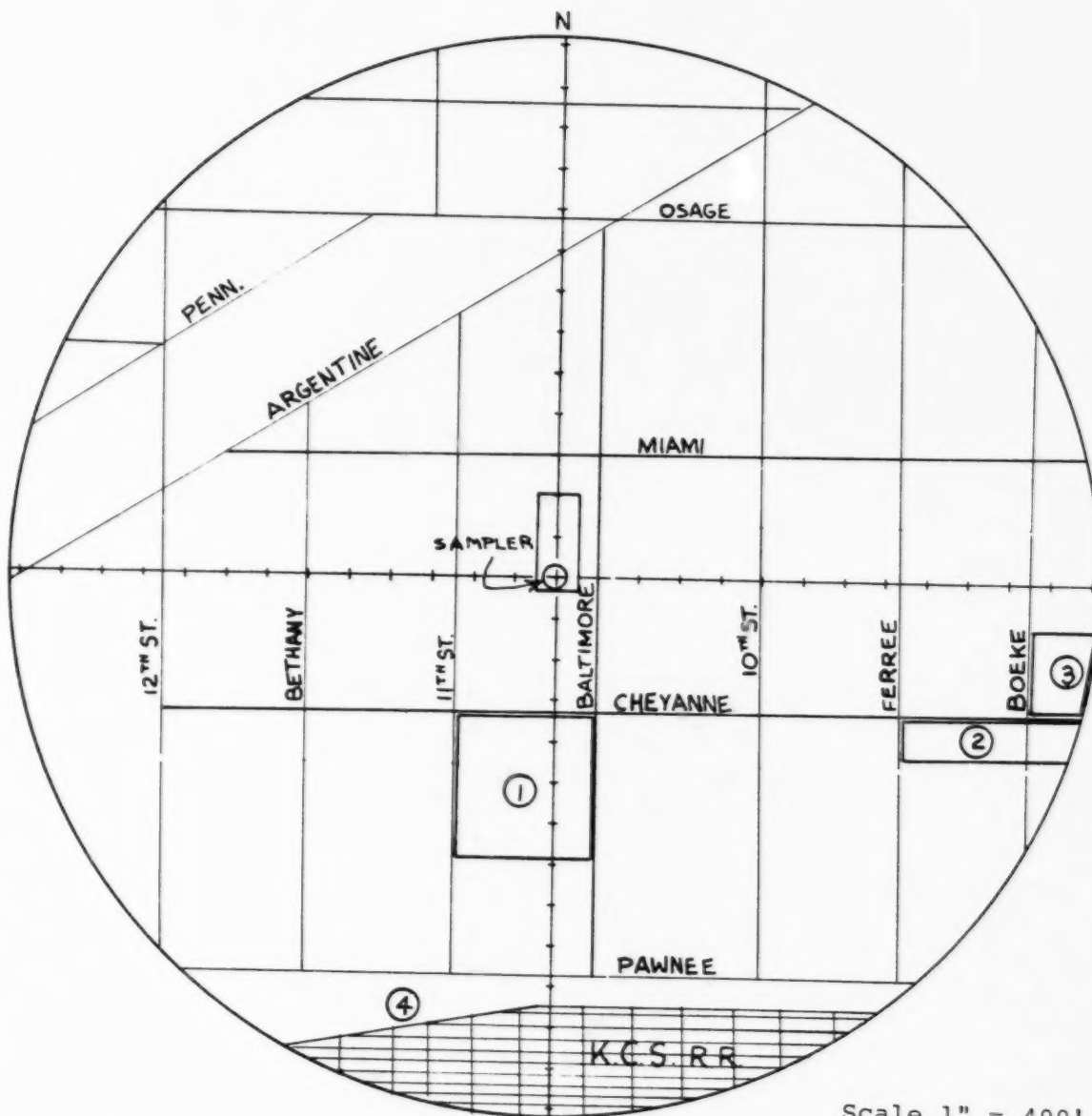
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Baltimore	100 ft	500 ADT, dirty, uncurbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	Site closed at end of 1975	-
1975	110	53
1974	107	53
1973	127	58



One mile radius around Baltimore and Miami site.



1. Unpaved lot, 2.8 acres, 50 trucks
2. Unpaved storage area, 0.8 acres
3. Unpaved storage area, 1.0 acres
4. Rail yard, 10 acres

One-quarter mile radius around Baltimore and Miami site.



Viewed to the west-northwest.



Viewed to the north.

Sampler at Baltimore and Miami.

POINT SOURCE SUMMARY

Site: Baltimore and Miami

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
44	40	.37	210
42	65	.85	300
43	785	.88	290
41	89	.93	310
39	72	1.0	290
40	43	1.0	300
45	50	1.6	125
38	107	1.8	280
12	65	1.9	105
33	88	2.3	30
37	451	2.8	275
34	245	3.1	40
11	28	3.1	60
10	737	3.7	55
31	282	4.1	20
36	26	4.2	275
30	1,030	4.2	20
32	449	4.3	30
7	814	4.5	55
29	1,559	4.7	15
27	891	4.7	355
35	55	4.8	265
28	38	4.8	0
3	758	5.0	40

AREA SOURCE SUMMARY

Site: Baltimore and Miami

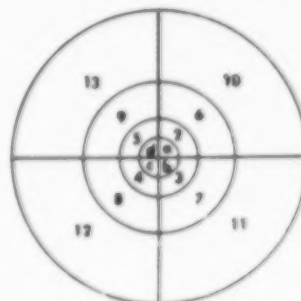
Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	5816 pop	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	1.7
Comm/Ind fuel	6177 emp	1.0	0.8	0.8	0.8	0.8	3.0	3.0	3.0	3.0	16.2
Incinerators											
Rail/Air		1.5		3.5	2.7		7.8	5.8	7.8	9.7	38.8
Auto exhaust	62.7x10 ⁶ VMT	1.6	2.5	0.2	0.4	1.6	14.1	4.6	4.6	12.0	41.6
INDUS PROCESSES:											
Ind processes	3 sources								12.0	29.0	41.0
FUGITIVE DUST:											
Railroad yards	244 ac	1.0		2.2	1.6		5.0	3.8	4.8	6.0	24.4
Clean streets	57.0x10 ⁶ VMT	4.3	8.5		4.3	4.3	74.7	25.6	25.6	66.2	213.5
Comm streets	5.7x10 ⁶ VMT	18.6	18.6	4.6		18.6	18.6		4.6	9.3	92.9
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas	16.8 ac	0.4		1.1				0.8			2.3
Unpaved pkg lots	8.3 ac	0.2					0.2				0.4
Recap		Emissions by sector, t/yr									
		1	2-5	6-9	Total						
COMBUSTION		4.2	14.5	79.6	98.3						
IND PROCESSES					41.0						
FUGITIVE DUST		24.5	63.8	245.2	333.5						
Total		28.7	78.3	365.8	472.8						

DESCRIPTION OF SITE

SAROAD code - 17 1800 007 H01

Location - 1312 South 55th, Kansas City,
Kansas

Monitor height - 25 ft, on roof of Turner
High School



Land use, by sector -

1a light residential	6 light residential
1b light residential	7 light residential
1c undeveloped	8 undeveloped
1d dense residential	9 light residential
2 light residential	10 general industry
3 light residential	11 dense residential
4 undeveloped	12 light residential
5 light residential	13 light residential

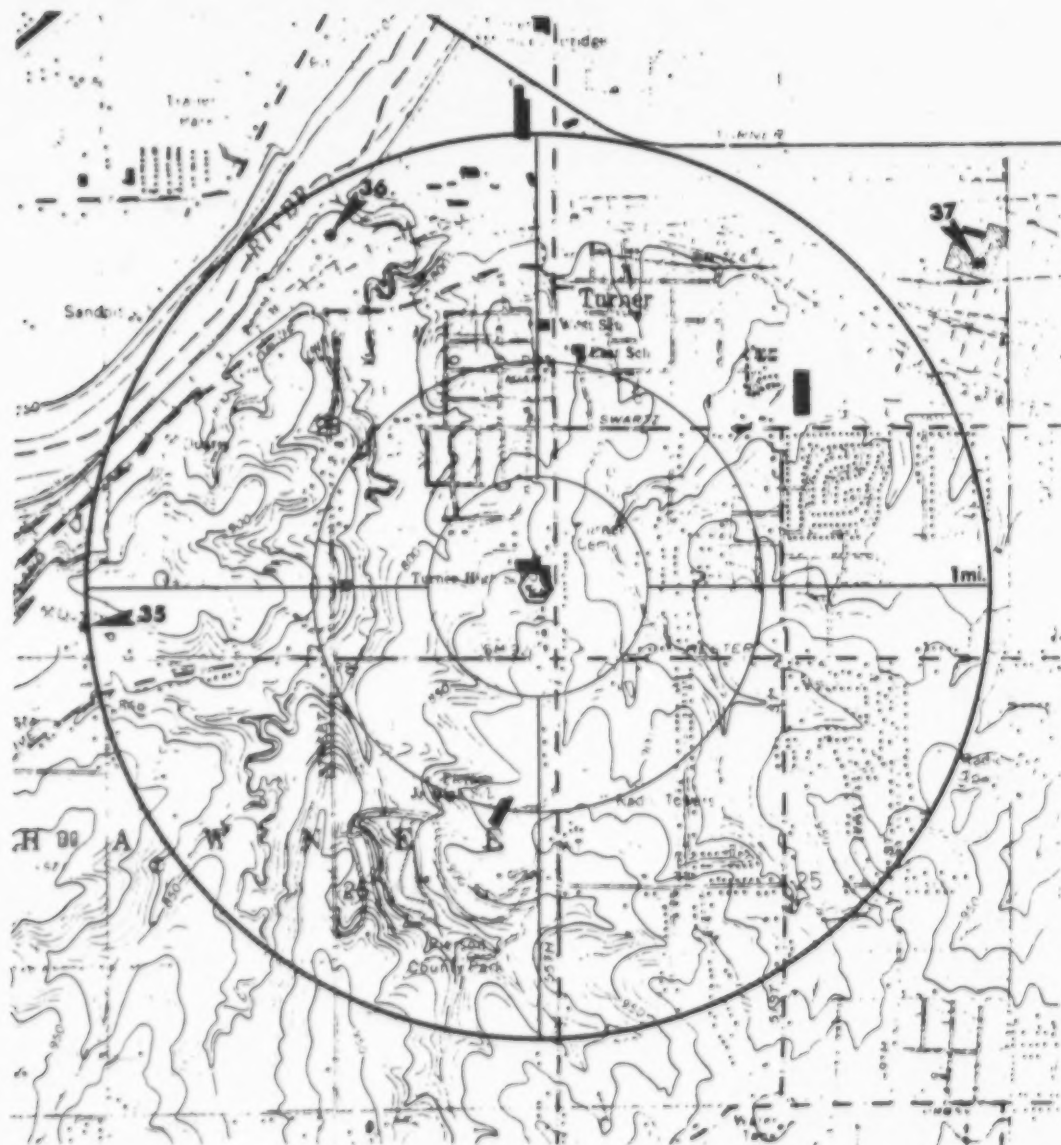
Topography - no special terrain

Localized sources, within 200 ft of monitor -

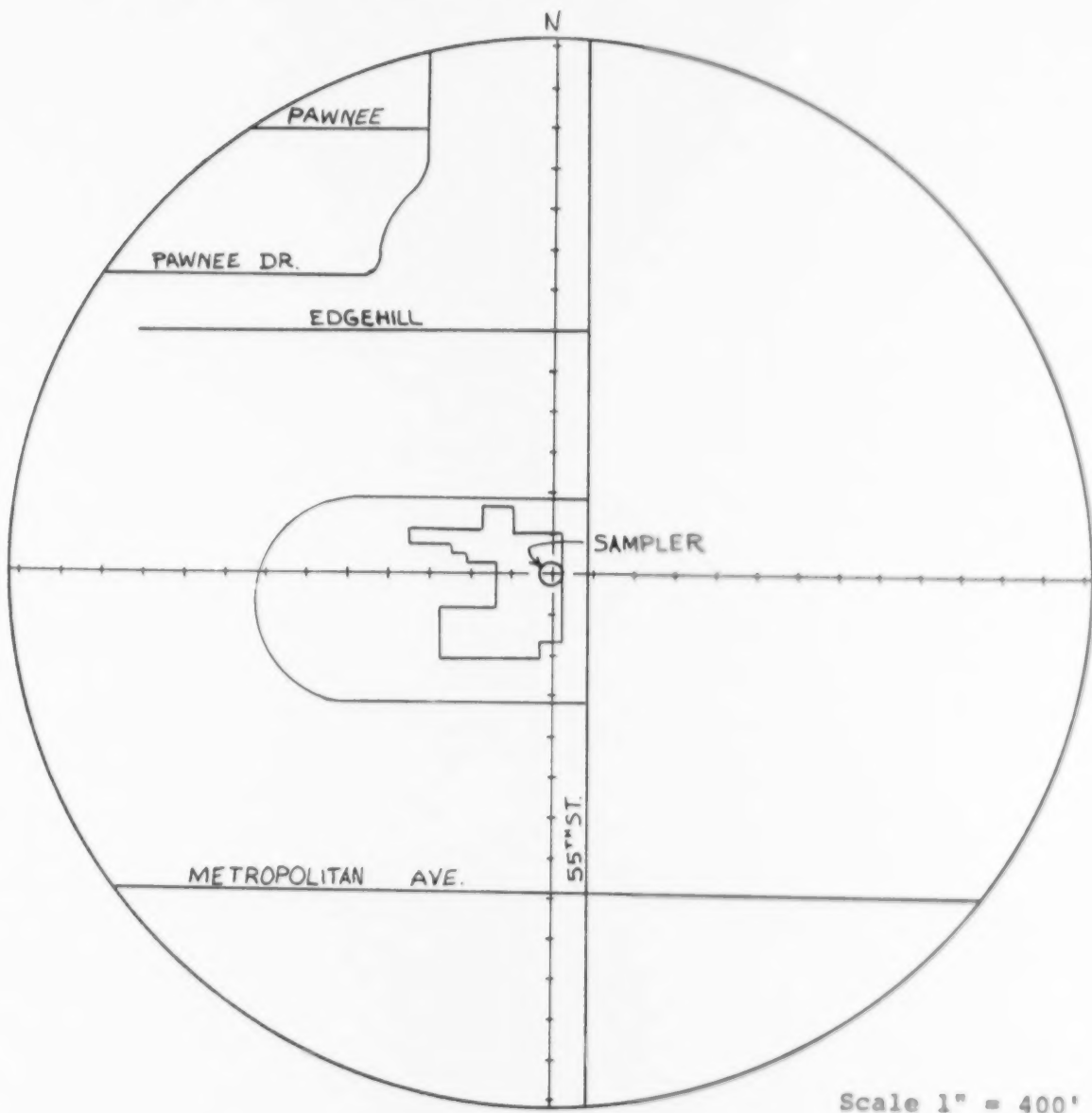
<u>Source</u>	<u>Distance</u>	<u>Description</u>
55th Street	85 ft	4920 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	66	52
1975	57	58
1974	64	41
1973	72	50



One mile radius around 1312 South 55th site.



One-quarter mile radius around 1312 South 55th site.



Viewed to the north-northwest.



Viewed to the east.

Sampler at 1312 South 55th.

POINT SOURCE SUMMARY

Site: 1312 South 55th

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
36	26	.90	330
35	55	1.0	265
37	461	1.2	60
38	107	2.1	75
39	72	3.0	80
43	785	3.0	80
40	43	3.2	70
41	89	3.2	75
42	65	3.2	80
44	40	3.5	90
45	50	5.0	95

AREA SOURCE SUMMARY

Site: 1312 South 55th

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	4281 pop	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	1.3
Comm/Ind fuel	703 emp	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	1.7
Incinerators											
Rail/Air							5.8			3.7	9.5
Auto exhaust	12.3x10 ⁶ VMT	0.9	0.7	0.6	0.2	0.1	2.8	1.4	0.8	0.6	8.1
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards	114 ac										
Clean streets	12.3x10 ⁶ VMT	5.1	4.1	3.7	0.9	0.4	15.7	7.9	4.7	4.4	11.4
Comm streets										3.7	46.2
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas	14.7 ac, aggregate									30.9	30.9
Unpaved pkg lots											

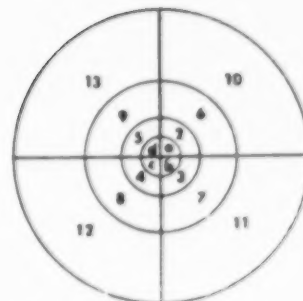
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	1.1	2.4	17.1	20.6
IND PROCESSES				
FUGITIVE DUST	5.1	9.1	74.3	88.5
Total	6.2	11.6	91.4	109.1

DESCRIPTION OF SITE

SAROAD code - 17 2030 001 F01

Location - 9224 Haskins, Lenexa, Kansas

Monitor height - 15 ft, on roof of fire station



Land use, by sector -

1a suburb commercial	6 suburb commercial
1b dense residential	7 dense residential
1c dense residential	8 light industry
1d suburb commercial	9 undeveloped
2 dense residential	10 dense residential
3 dense residential	11 dense residential
4 dense residential	12 undeveloped
5 dense residential	13 undeveloped

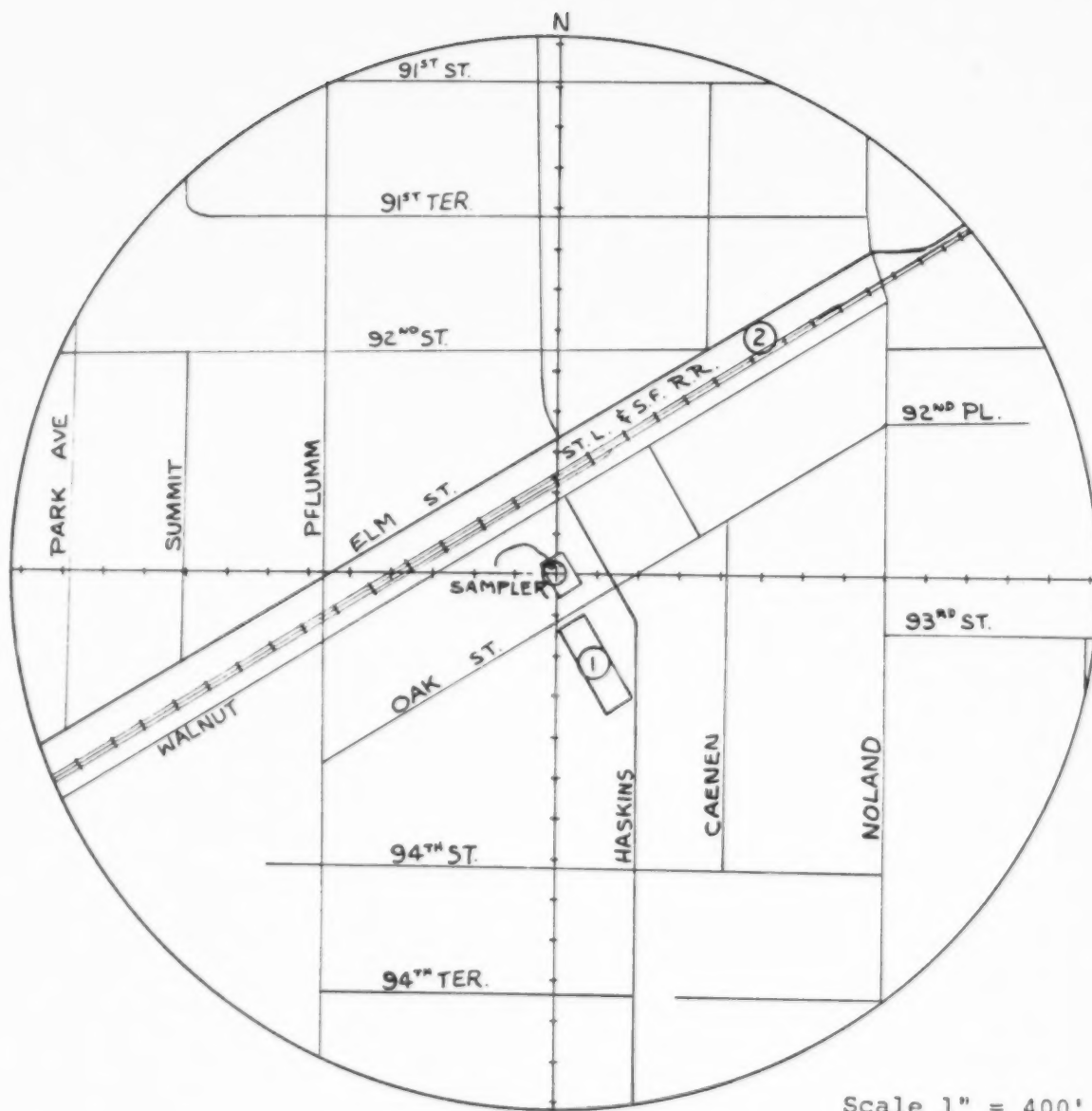
Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Oak	75 ft	200 ADT, clean, uncurbed
Haskins	120 ft	200 ADT, clean, uncurbed
Walnut	150 ft	200 ADT, clean, uncurbed
Church parking lot	200 ft	unpaved, 0.4 acres, 200 cars

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	67	44
1975	59	55
1974	70	52
1973	75	54



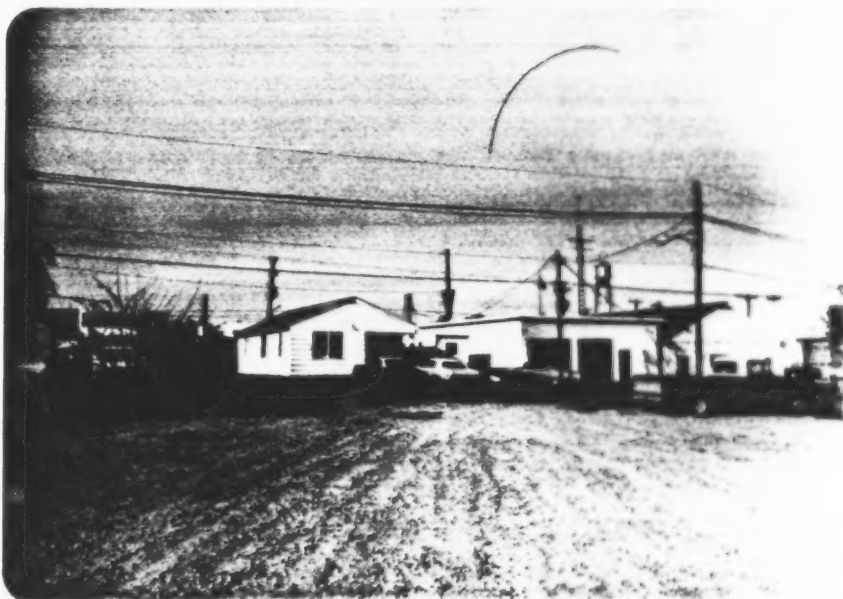
Scale 1" = 400'

1. Unpaved church lot, 0.4 acres, 200 cars
2. Rail yard, 2 acres

One-quarter mile radius around 9224 Haskins site.



Viewed to the southeast.



Viewed to the north-northwest.

Sampler at 9224 Haskins.

POINT SOURCE SUMMARY

Site: 9224 Haskins

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction, °
56	40	2.8	245
65	171	3.0	265

AREA SOURCE SUMMARY

Site: 9224 Haskins

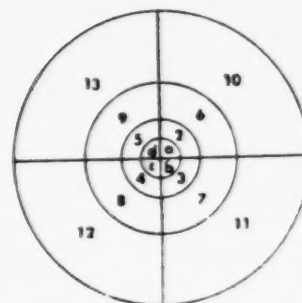
Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	3963 pop	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	1.3
Comm/Ind fuel	2299 emp	0.2	0.2	0.2	0.2	0.2	0.7	0.7	0.7	0.7	3.8
Incinerators											
Rail/Air											
Auto exhaust	34.8x10 ⁶ VMT	1.2	0.2	0.7	0.5	0.2	6.0	11.7	1.4	1.2	23.1
INDUS PROCESSES:											
Ind processes	1 source			5.0							5.0
FUGITIVE DUST:											
Railroad yards		0.2	0.2		0.3				0.5		1.2
Clean streets	34.8x10 ⁶ VMT	6.5	1.3	3.9	2.6	1.3	33.9	66.5	7.8	6.5	130.3
Comm streets											
Unpaved roads											
Cleared areas											
Construction	4 ac								8.0		8.0
Agriculture											
Storage areas											
Unpaved pkg lots	0.4 ac	0.4									0.4
		Emissions by sector, t/yr									
Recap		1	2-5	6-9	Total						
COMBUSTION		1.5	2.8	23.9	28.2						
IND PROCESSES											
FUGITIVE DUST		7.1	9.6	123.2	139.9						
Total		8.6	17.4	147.1	173.1						

DESCRIPTION OF SITE

SAROAD code - 17 2780 001 F01

Location - 10100 England, Overland Park,
Kansas

Monitor height - 15 ft, on roof of
Dorothy Moody School



Land use, by sector -

1a dense residential	6 dense residential
1b dense residential	7 undeveloped
1c dense residential	8 undeveloped
1d dense residential	9 dense residential
2 dense residential	10 dense residential
3 dense residential	11 undeveloped
4 dense residential	12 undeveloped
5 dense residential	13 dense residential

Topography - no special terrain

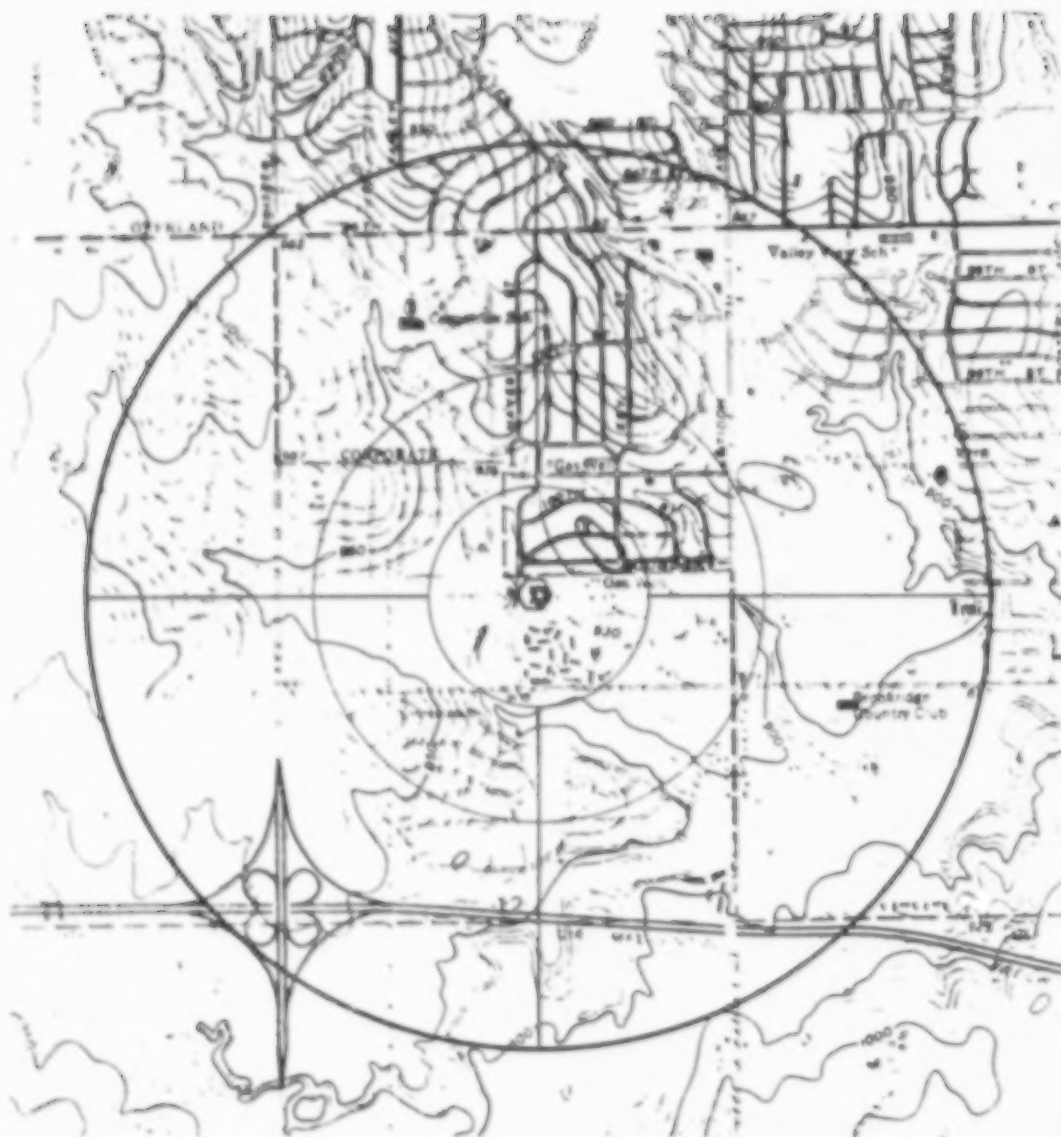
Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
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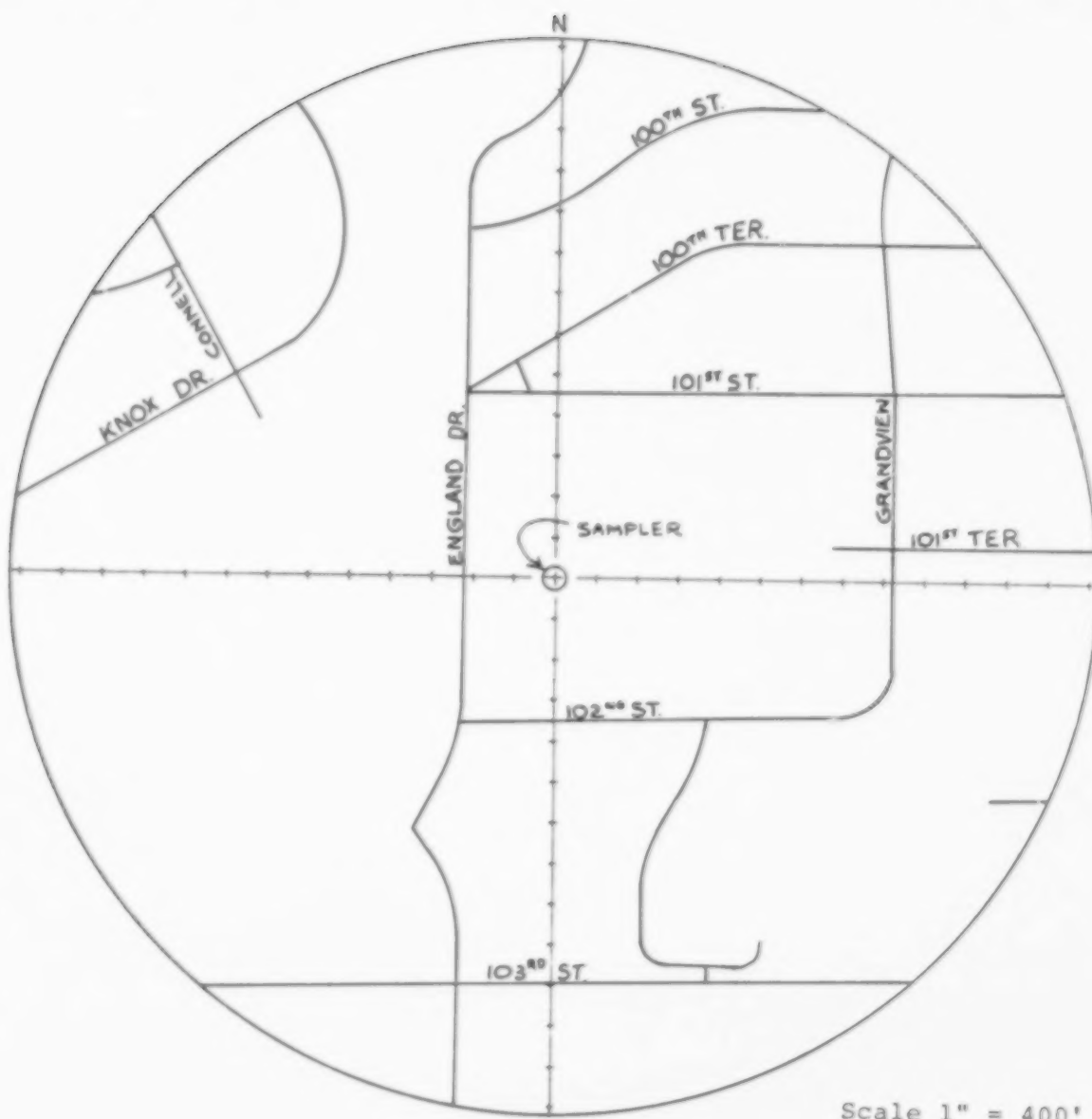
None

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	53	58
1975	43	53
1974	43	58
1973	56	43



One mile radius around 10100 England site.



Scale 1" = 400'

One-quarter mile radius around 10100 England site.



Viewed to the east.



Viewed to the northwest.
Sampler at 10100 England.

POINT SOURCE SUMMARY

Site: 10100 England

<u>Plant number</u>	<u>Emission level, t/yr</u>	<u>Distance from site, mi</u>	<u>Compass direction, °</u>
56	40	4.9	265

AREA SOURCE SUMMARY

Site: 10100 England

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	7020 pop	0.1	0.1	0.1	0.1	0.1	0.4	0.4	0.4	0.4	2.1
Comm/Ind fuel	1485 emp	0.2	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.5	2.6
Incinerators											
Rail/Air											
Auto exhaust	33.0x10 ⁶ VMT	0.2	0.9	1.1	0.2	0.2	5.4	5.4	4.6	3.7	21.7
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards											
Clean streets	33.0x10 ⁶ VMT	1.2	4.9	6.2	1.3	1.3	31.0	31.0	26.0	21.0	123.9
Comm streets											
Unpaved roads											
Cleared areas											
Construction	2 ac						4.0				4.0
Agriculture											
Storage areas											
Unpaved pkg lots											

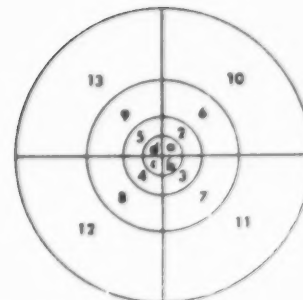
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	0.5	3.2	22.7	26.4
IND PROCESSES				
FUGITIVE DUST	1.2	13.7	113.0	127.9
Total	1.7	16.9	135.7	154.3

DESCRIPTION OF SITE

SAROAD code - 17 2660 001 F01

Location - 100 Park Street,
Olathe, Kansas

Monitor height - 40 ft, on roof of
courthouse



Land use, by sector -

1a suburb commercial	6 dense residential
1b suburb commercial	7 dense residential
1c suburb commercial	8 dense residential
1d suburb commercial	9 dense residential
2 dense residential	10 undeveloped
3 dense residential	11 undeveloped
4 dense residential	12 undeveloped
5 dense residential	13 undeveloped

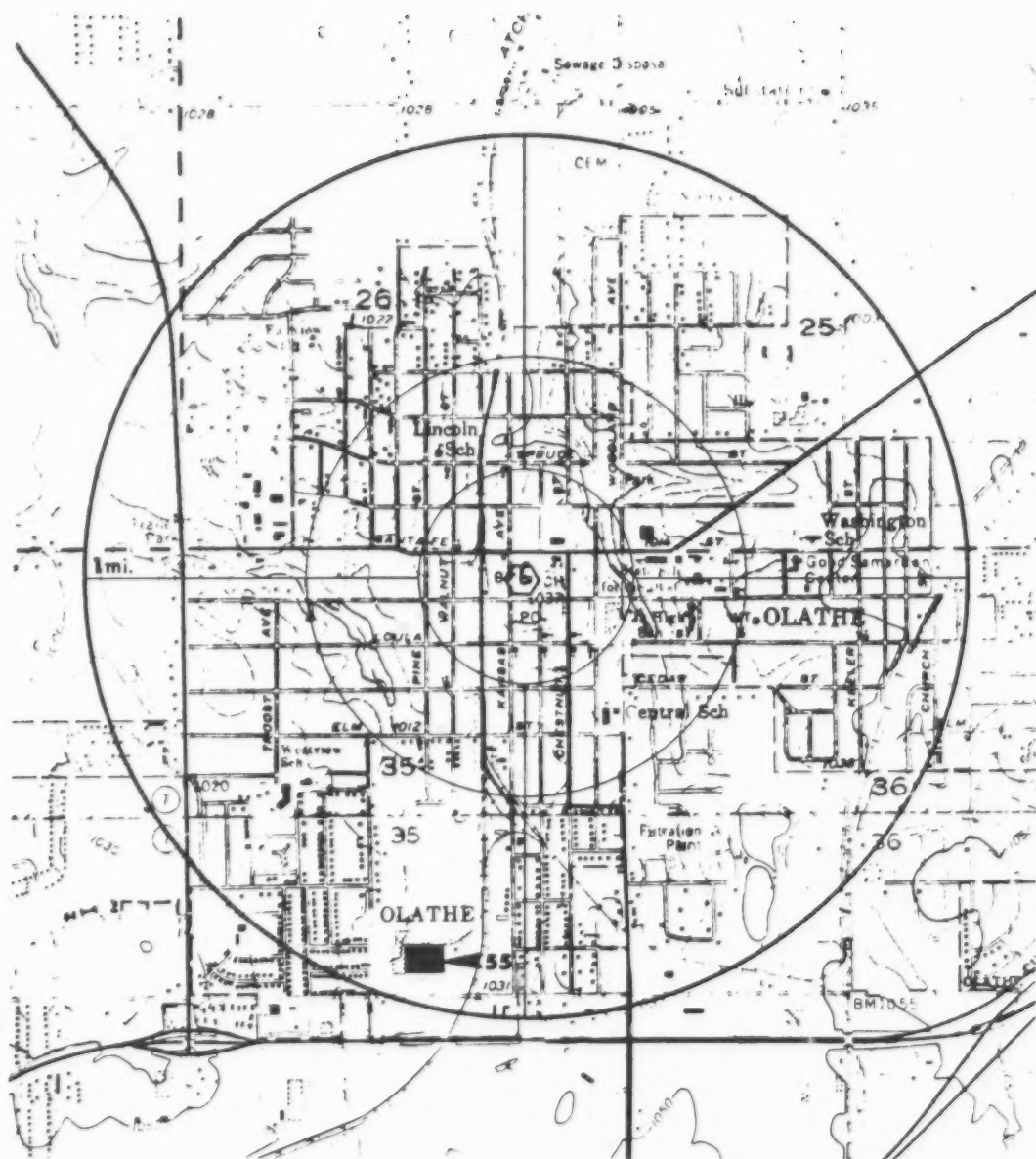
Topography - no special terrain

Localized sources, within 200 ft of monitor -

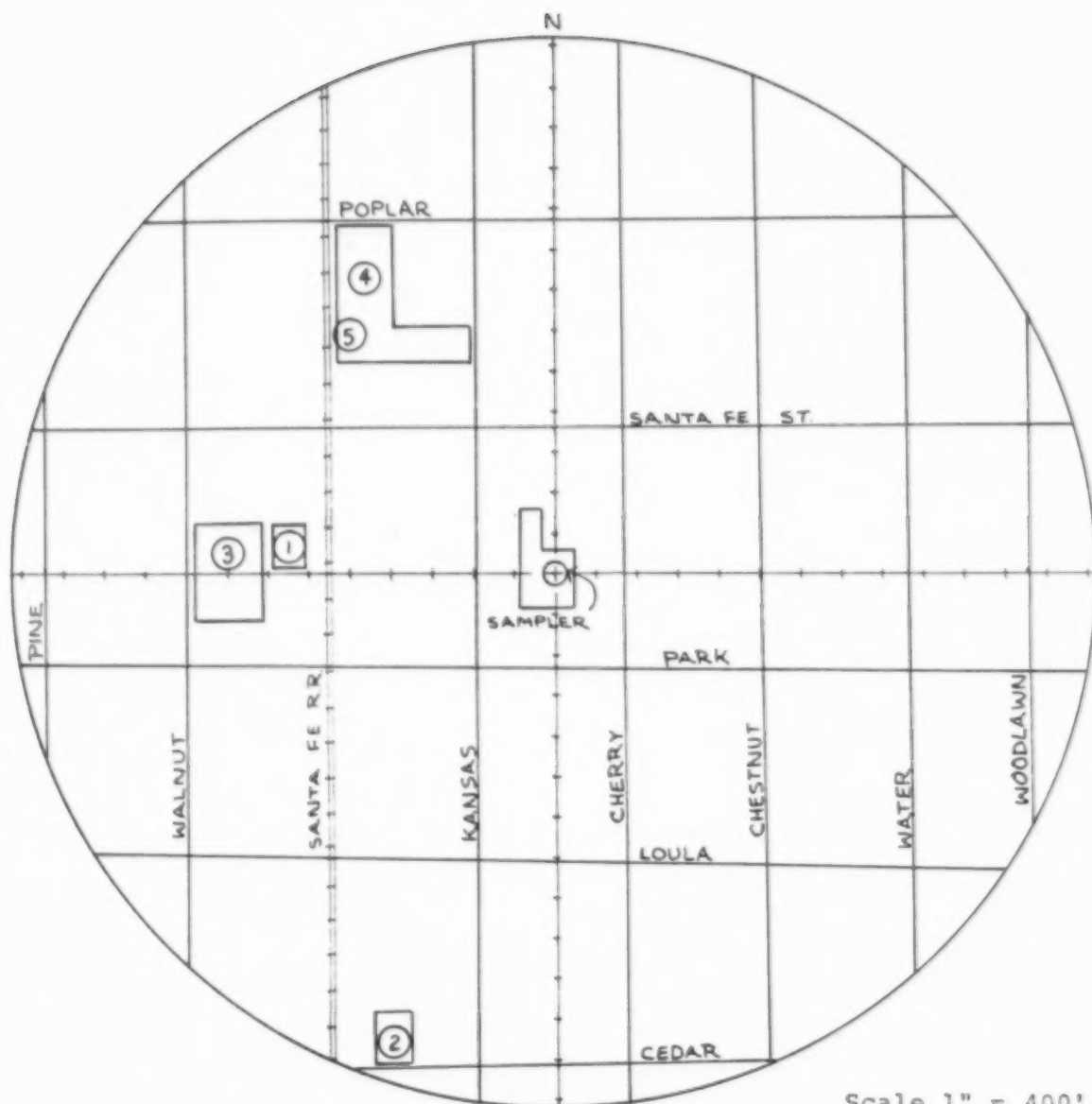
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Kansas	195 ft	6920 ADT, clean, curbed
Cherry	170 ft	2800 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	66	56
1975	54	60
1974	76	57
1973	-	15



One mile radius around 100 Park Street site.



Scale 1" = 400'

1. Unpaved storage area, 0.1 acre
2. Unpaved parking lot, 0.2 acre, 15 cars
3. Unpaved storage area, 0.8 acre
4. Unpaved parking lot, 1.4 acre, 50 cars
5. Farmers Union Elevator

One-quarter mile radius around 100 Park Street site.



Viewed to the north-northwest.



Viewed to the northeast.
Sampler at 100 Park Street.

POINT SOURCE SUMMARY

Site: 100 Park Street

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction,°
55	41	0.92	195
56	40	4.6	30

AREA SOURCE SUMMARY

Site: 100 Park Street

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	6065 pop	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	1.7
Comm/Ind fuel	1884 emp	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	3.4
Incinerators											
Rail/Air											
Auto exhaust	17.3x10 ⁶ VMT	1.7	1.5		0.4	0.6	3.0	0.2	1.9	2.0	11.3
INDUS PROCESSES:											
Ind processes	2 sources	1.2							17.0		18.2
FUGITIVE DUST:											
Railroad yards	18.4 ac	0.2			0.1	0.1		0.5	0.4	0.5	1.8
Clean streets	17.3x10 ⁶ VMT	9.8	8.4	0.2	2.6	3.2	16.8	1.3	11.0	11.7	65.0
Comm streets											
Unpaved roads	100 driveways	0.3			0.1	0.2			0.2	0.2	1.0
Cleared areas											
Construction	5.5 ac								10.9		10.9
Agriculture											
Storage areas	6.6 ac	0.2								12.0	12.2
Unpaved pkg lots	3.9 ac	0.7									0.7

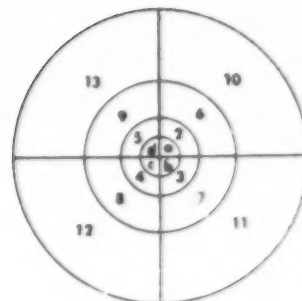
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	2.0	3.7	10.7	16.4	
IND PROCESSES	1.2		17.0	18.2	
FUGITIVE DUST	11.2	14.9	65.5	91.6	
Total	14.4	18.6	93.2	126.2	

DESCRIPTION OF SITE

SAROAD code - 17 1980 001 F01

Location - 422 Walnut, Leavenworth,
Kansas

Monitor height - 15 ft, on roof of health
department building



Land use, by sector -

1a light industry	6 undeveloped
1b dense residential	7 undeveloped
1c dense residential	8 dense residential
1d light industry	9 dense residential
2 light industry	10 undeveloped
3 dense residential	11 undeveloped
4 dense residential	12 light residential
5 central commercial	13 dense residential

Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Fifth Street	100 ft	2800 ADT, clean, curbed
Walnut Street	60 ft	500 ADT, clean, curbed

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	72	52
1975	66	52
1974	62	53
1973	62	53



One mile radius around 422 Walnut site.



1. Bay State Milling, 32 silos

One-quarter mile radius around 422 Walnut site.



Viewed to the northeast.



Viewed to the southeast.

Sampler at 422 Walnut.

POINT SOURCE SUMMARY

Site: 422 Walnut

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction,°
59	162	.18	325
60	83	.90	10

AREA SOURCE SUMMARY

Site: 422 Walnut

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	7712 pop	0.2	0.2	0.2	0.2	0.2	0.6	0.6	0.6	0.6	3.4
Comm/Ind fuel	3174 emp	0.2	0.1	0.1	0.1	0.1	0.6	0.6	0.6	0.6	3.0
Incinerators											
Rail/Air											
Auto exhaust	17.6x10 ⁶ VMT	2.0	0.3	1.0	1.2	0.8	0.2	2.0	2.1	2.0	11.6
INDUS PROCESSES:											
Ind processes	2 sources	2.0					3.0				5.0
FUGITIVE DUST:											
Railroad yards	4.6 ac			0.3		0.2					0.5
Clean streets	17.6x10 ⁶ VMT	11.2	2.0	5.9	6.6	4.6	1.3	11.2	11.8	11.2	65.8
Comm streets											
Unpaved roads											
Cleared areas											
Construction											
Agriculture											
Storage areas									0.2	0.2	1.1
Unpaved pkg lots	5 ac		0.7								

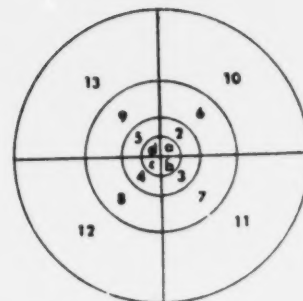
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	2.4	4.5	11.1	18.0
IND PROCESSES	2.0		3.0	5.0
FUGITIVE DUST	11.2	20.3	35.9	67.4
Total	15.6	24.8	50.0	90.4

DESCRIPTION OF SITE

SAROAD code - 17 2000 001 F01

Location - 321 Delaware, Tonganoxie,
Kansas

Monitor height - 18 ft, on roof of
fire station



Land use, by sector -

1a undeveloped	6 undeveloped
1b dense residential	7 undeveloped
1c dense residential	8 undeveloped
1d dense residential	9 undeveloped
2 undeveloped	10 undeveloped
3 undeveloped	11 undeveloped
4 light residential	12 undeveloped
5 light residential	13 undeveloped

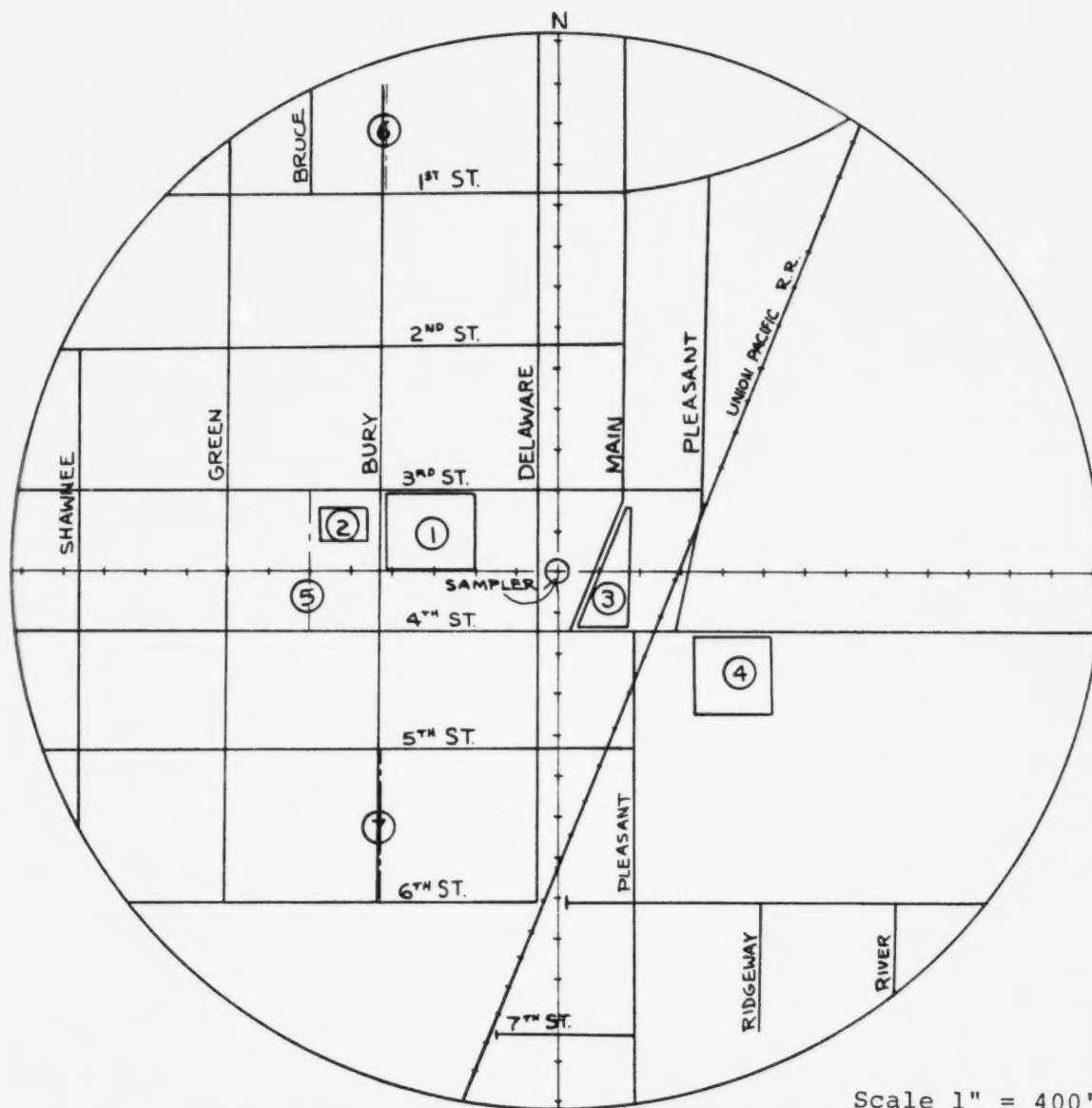
Topography - no special terrain

Localized sources, within 200 ft of monitor -

<u>Source</u>	<u>Distance</u>	<u>Description</u>
Delaware	40 ft	200 ADT, dirty, curbed
Fourth Street	130 ft	500 ADT, dirty, curbed
Main Street	180 ft	500 ADT, dirty, curbed
Parking lot	150 ft	unpaved, 0.3 acres, 30 cars

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	107	58
1975	90	55
1974	82	42
1973	88	53



Scale 1" = 400'

1. Unpaved car storage lot, 1.1 acres, 100 cars
2. Unpaved car storage lot, 0.2 acres, 40 cars
3. Unpaved lot 0.3 acres, 30 cars
4. Emery Feed, 12 silos
5. Unpaved alley, 350 feet
6. Unpaved road, 250 feet
7. Unpaved road, 350 feet

One-quarter mile radius around 321 Delaware site.



Viewed to the east-southeast.



Viewed to the south-southeast.

Sampler at 321 Delaware.

POINT SOURCE SUMMARY

Site: 321 Delaware Street

<u>Plant number</u>	<u>Emission level, t/yr</u>	<u>Distance from site, mi</u>	<u>Compass direction, °</u>
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There are no point sources
within 5 mi of this site.

AREA SOURCE SUMMARY

Site: 321 Delaware

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	291 pop										
Comm/Ind fuel	67 emp										neg
Incinerators											neg
Rail/Air											
Auto exhaust	1.3x10 ⁶ VMT	0.2	0.1		0.1	0.1	0.2	0.1	0.2		1.0
INDUS PROCESSES:											
Ind processes	1 source	22.0									22.0
FUGITIVE DUST:											
Railroad yards											
Clean streets	1.25x10 ⁶ VMT	1.0	0.4		0.5	0.1	0.9	0.5	1.3		4.7
Comm streets											
Unpaved roads	8.0x10 ⁴ VMT	9.9	18.2		9.9	16.5	28.0	18.2	23.1	41.2	165.0
Cleared areas											
Construction											
Agriculture	800 ac						5.3	5.2	5.0	5.0	20.5
Storage areas											
Unpaved pkg lots	1.6 ac	0.5									0.5

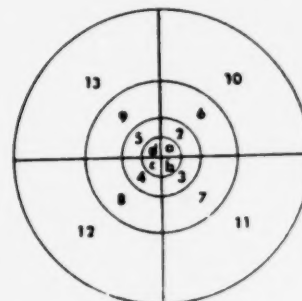
Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	0.2	0.3	0.5	1.0
IND PROCESSES	22.0			22.0
FUGITIVE DUST	11.4	45.6	133.7	190.7
Total	33.6	45.9	134.2	213.7

DESCRIPTION OF SITE

SAROAD code - 17 3840 008 H01

Location - Brauer School, Wyandotte
County, Kansas

Monitor height - 15 ft, on roof of
Brauer School



Land use, by sector -

1a undeveloped	6 undeveloped
1b undeveloped	7 undeveloped
1c undeveloped	8 undeveloped
1d undeveloped	9 undeveloped
2 undeveloped	10 undeveloped
3 undeveloped	11 undeveloped
4 undeveloped	12 undeveloped
5 undeveloped	13 undeveloped

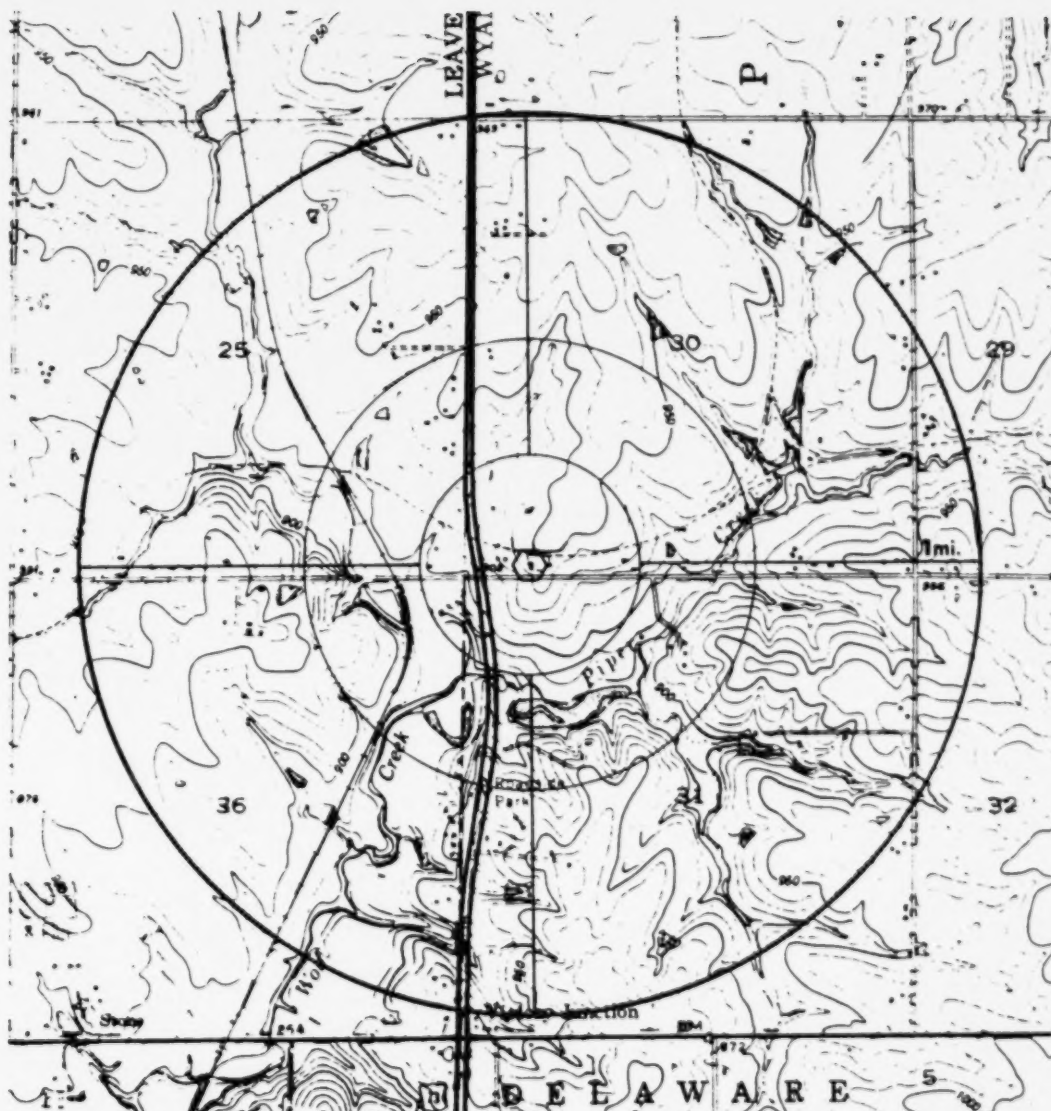
Topography - no special terrain

Localized sources, within 200 ft of monitor -

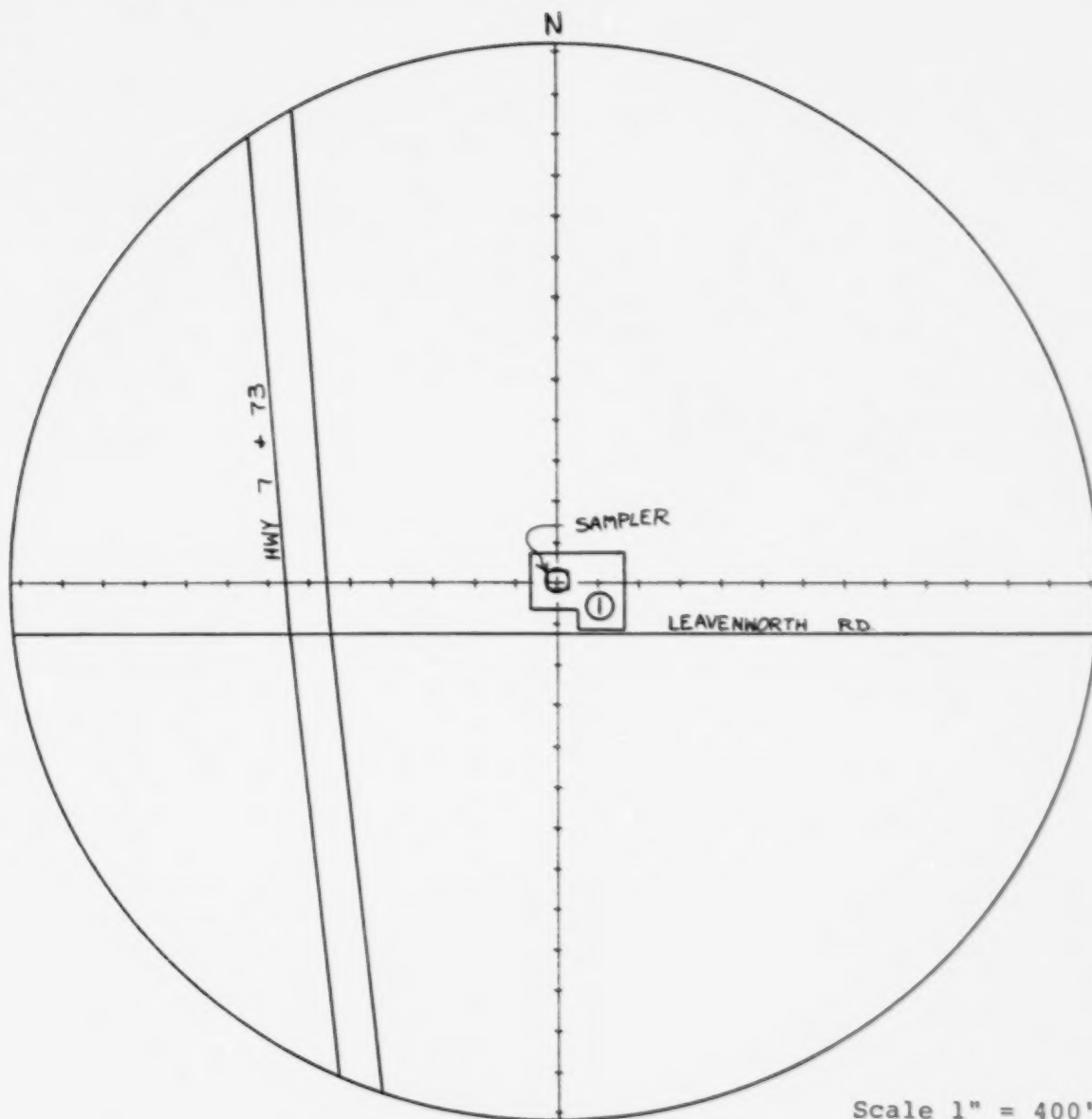
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Leavenworth Road	135 ft	1110 ADT, dirty, uncurbed,
Parking lot	50 ft	unpaved, 0.7 acres, 30 cars

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	Site closed at end of 1975	
1975	52	45
1974	45	46
1973	45	57



One mile radius around Brauer School site.



1. Unpaved lot, 0.7 acres, 30 cars

One-quarter mile radius around Brauer School site.



Viewed to the southwest.



Viewed to the west.

Sampler at Brauer School.

POINT SOURCE SUMMARY

Site: Brauer School

<u>Plant number</u>	<u>Emission level, t/yr</u>	<u>Distance from site, mi</u>	<u>Compass direction, °</u>
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There are no point sources
within 5 mi of this site.

AREA SOURCE SUMMARY

Site: Brauer School

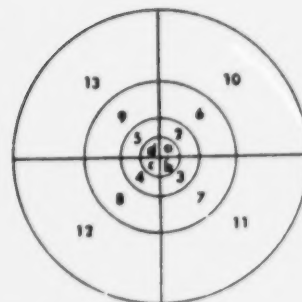
Source category	Activity rate	Emissions by sector, ton/yr										
		1	2	3	4	5	6	7	8	9	Total	
COMBUSTION:												
Residential fuel	324 pop											
Comm/Ind fuel	77 emp										neg	
Incinerators											neg	
Rail/Air												
Auto exhaust	5.8x10 ⁶ VMT	0.9			0.5	0.5		0.1	0.9	0.9	3.8	
INDUS PROCESSES:												
Ind processes												
FUGITIVE DUST:												
Railroad yards												
Clean streets	5.8x10 ⁶ VMT	5.2		0.2	2.6	2.6		0.6	5.2	5.2	21.6	
Comm streets												
Unpaved roads	2.2 mi				1.0		2.0	2.0	2.0	1.0	8.0	
Cleared areas												
Construction												
Agriculture	800 ac	2.3	2.3	2.3	2.3	2.3		2.2	2.3	2.2	20.5	
Storage areas												
Unpaved pkg lots	0.7 ac	0.2									0.2	
Recap												
		Emissions by sector, t/yr									Total	
		1	2-5	6-9								Total
COMBUSTION		0.9	1.0	1.9								3.8
IND PROCESSES												
FUGITIVE DUST		7.7	15.6	27.0								50.3
Total		8.6	16.6	28.9								54.1

DESCRIPTION OF SITE

SAROAD code - 17 1760 004 F01

Location - 226 West Nelsen,
Edgerton, Kansas

Monitor height - 15 ft, on roof of school



Land use, by sector -

1a light residential	6 agriculture
1b light residential	7 agriculture
1c light residential	8 agriculture
1d light residential	9 agriculture
2 light residential	10 agriculture
3 light residential	11 agriculture
4 undeveloped	12 agriculture
5 undeveloped	13 agriculture

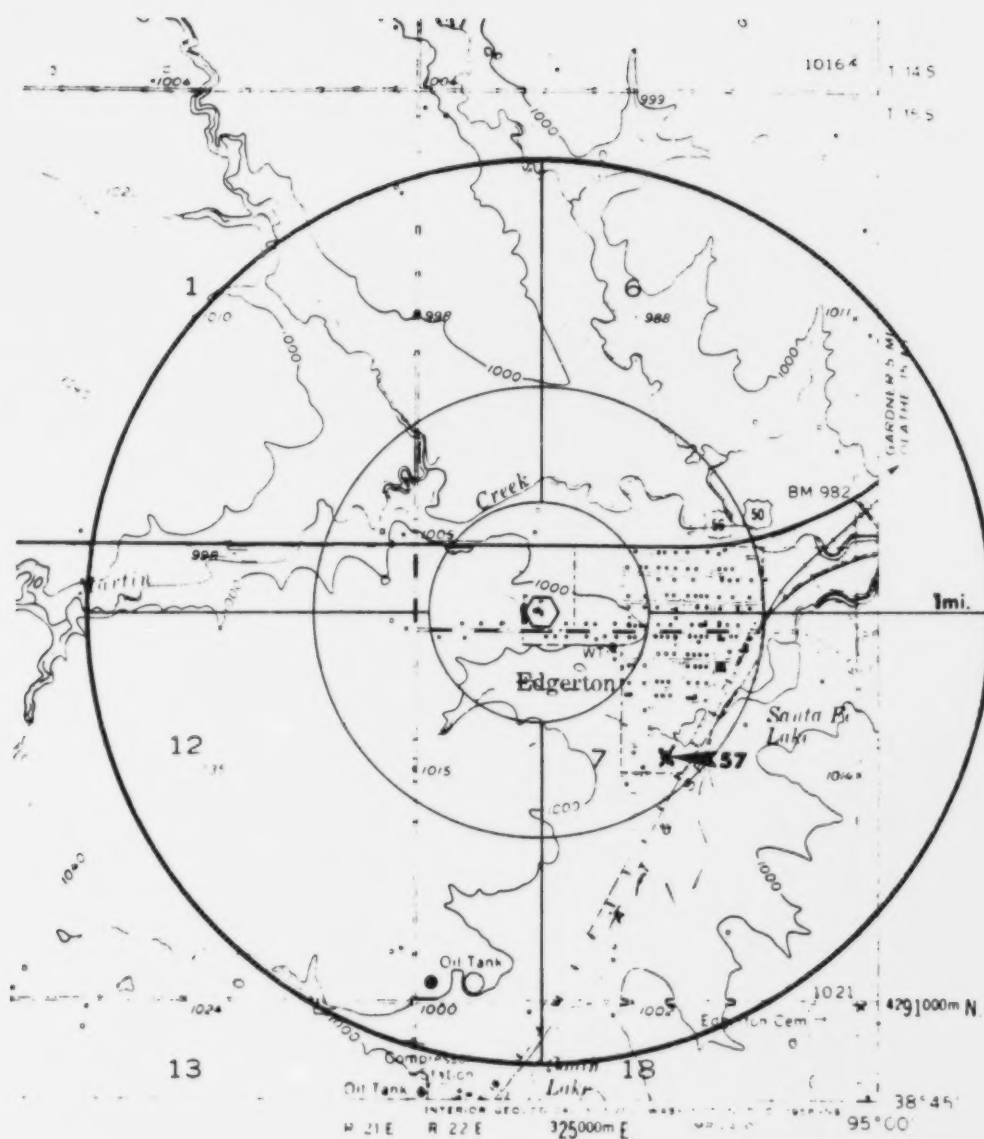
Topography - no special terrain

Localized sources, within 200 ft of monitor -

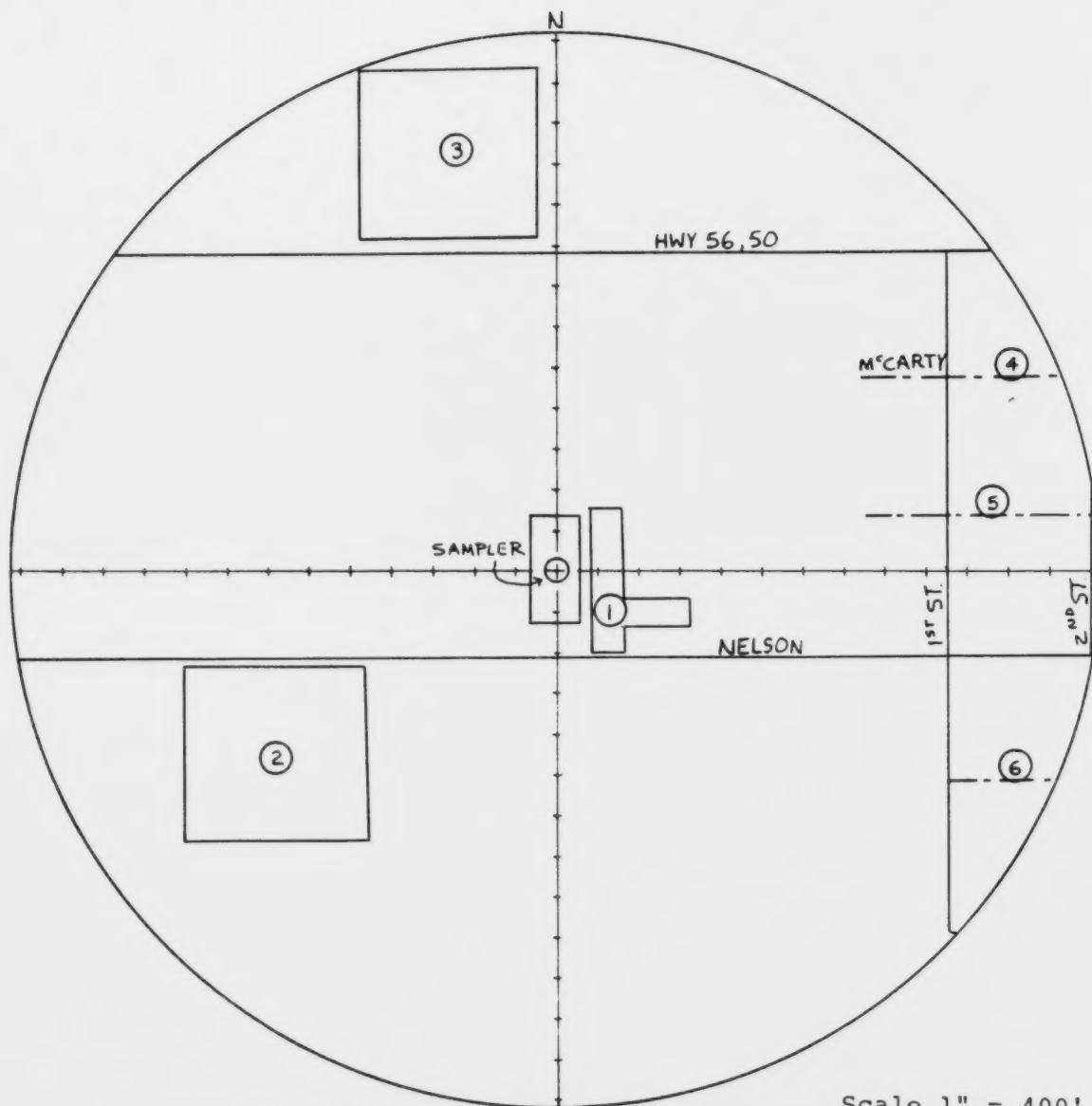
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Unpaved parking lot	100 ft	0.6 acres, 50 cars

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	57	52
1975	54	53
1974	53	54
1973	47	56



One mile radius around 226 West Nelsen site.



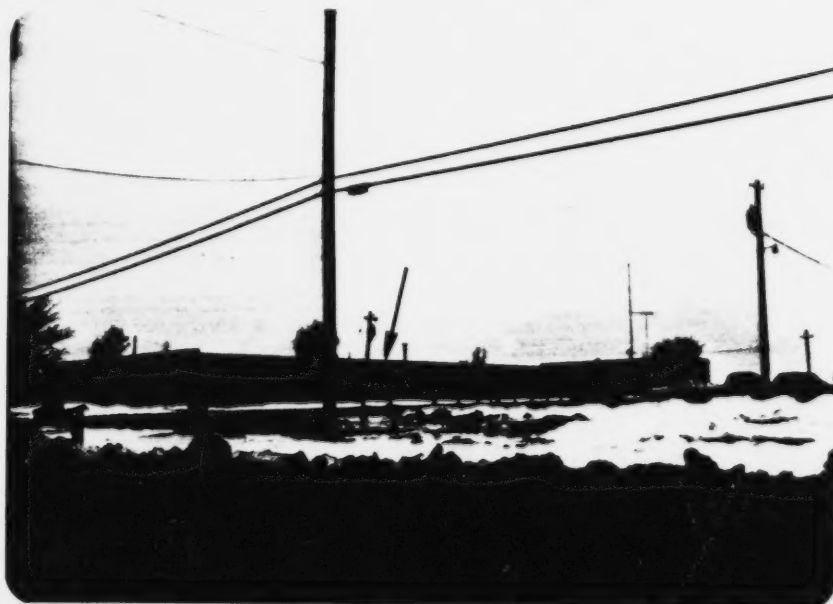
Scale 1" = 400'

1. Unpaved parking lot, 0.6 acre, 50 cars
2. Agricultural area, 4 acres
3. Agricultural area, 4 acres
4. Unpaved road, 475 feet, 20 acres
5. Unpaved road, 600 feet, 20 acres
6. Unpaved road, 250 feet, 20 acres

One-quarter mile radius around 226 West Nelsen site.



Viewed to the northeast.



Viewed to the northwest.

Sampler at 226 West Nelsen.

POINT SOURCE SUMMARY

Site: 226 West Nelsen

<u>Plant number</u>	<u>Emission level, t/yr</u>	<u>Distance from site, mi</u>	<u>Compass direction, °</u>
57	152	.43	140

AREA SOURCE SUMMARY

Site: 226 West Nelsen

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	179 pop										
Comm/Ind fuel	32 emp										neg
Incinerators											neg
Rail/Air											
Auto exhaust	9.5x10 ⁵ VMT	0.1	0.1			0.1	0.1		0.2	0.6	
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards	14 ac						0.4	1.0		1.4	
Clean streets	8.6x10 ⁵ VMT	0.6	0.4	0.1	0.4	0.7	0.1	0.1	0.9	3.3	
Comm streets	0.9x10 ⁵ VMT	0.3	0.2			0.2	0.3		0.4	1.4	
Unpaved roads	0.1x10 ⁵ VMT	2.9	3.7	5.6	1.9				1.9	16.0	
Cleared areas											
Construction											
Agriculture	800 ac	0.2	1.8	1.8	2.4	2.4	2.5	3.1	3.1	3.2	20.5
Storage areas	11.5 ac, aggregate			24.1						24.1	
Unpaved pkg lots	0.6 ac	0.5								0.5	

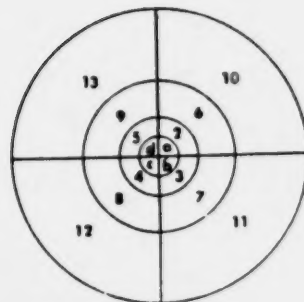
Recap	Emissions by sector, t/yr				
	1	2-5	6-9	Total	
COMBUSTION	0.1	0.2	0.3	0.6	
IND PROCESSES					
FUGITIVE DUST	4.5	45.7	17.0	67.2	
Total	4.6	45.9	17.3	67.8	

DESCRIPTION OF SITE

SAROAD code - 26 2380 002 P01

Location - 1517 Locust Street, Kansas
City, Missouri

Monitor height - 20 ft, on roof of
fire station



Land use, by sector -

1a central commercial	6 dense residential
1b central commercial	7 light industry
1c central commercial	8 light industry
1d central commercial	9 central commercial
2 central commercial	10 general industry
3 central commercial	11 dense residential
4 central commercial	12 general industry
5 central commercial	13 general industry

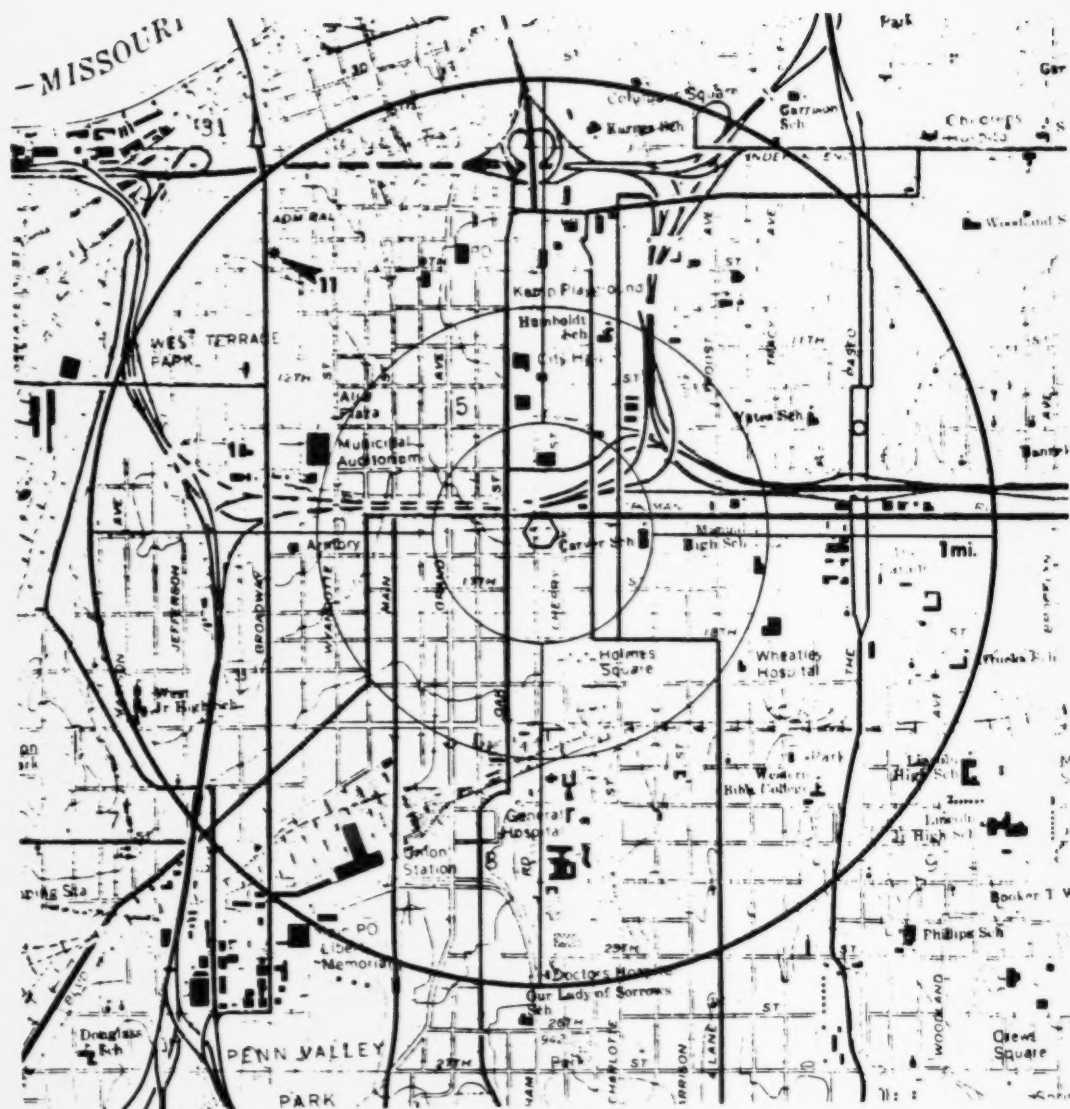
Topography - no special terrain

Localized sources, within 200 ft of monitor -

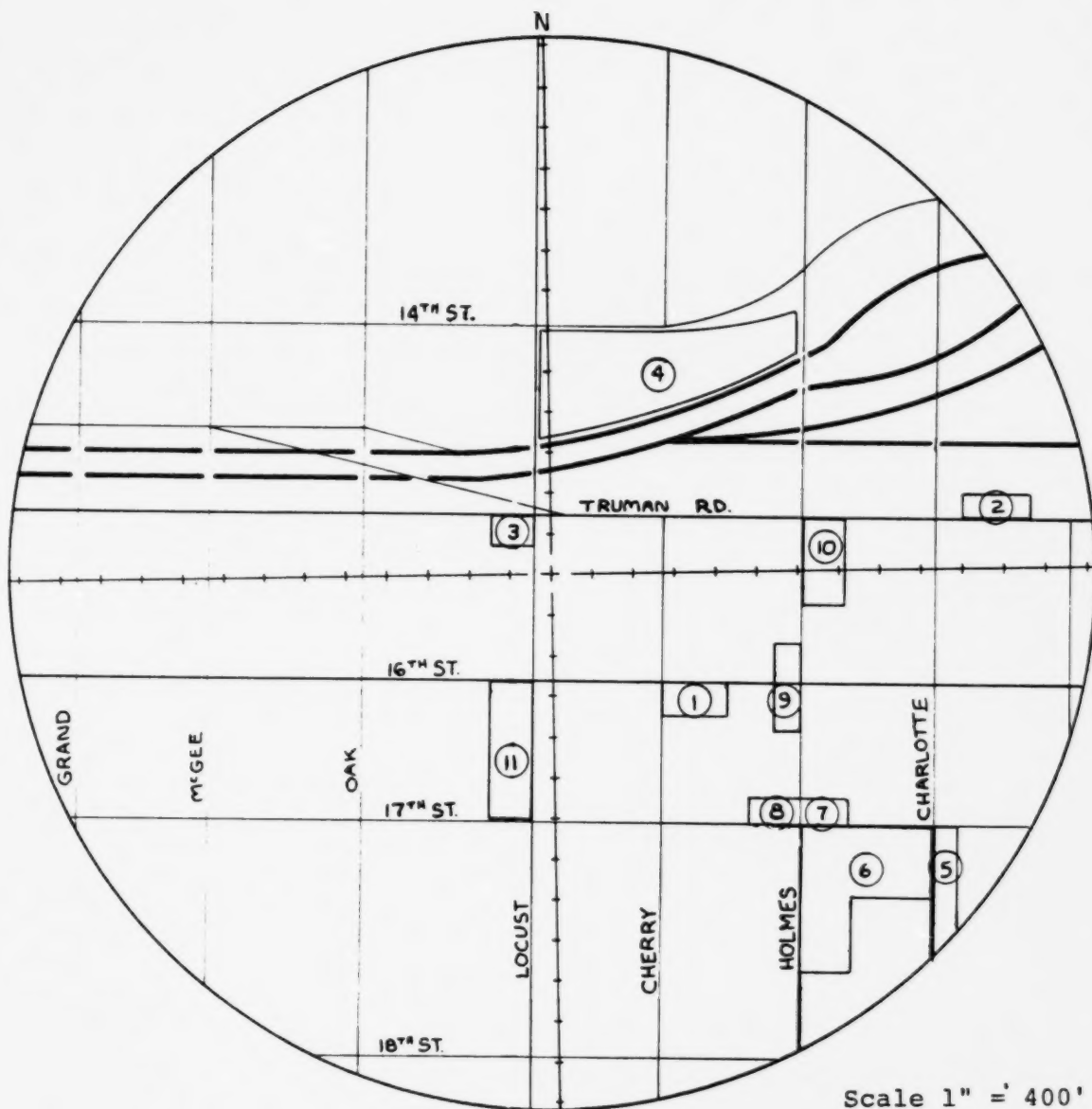
<u>Source</u>	<u>Distance</u>	<u>Description</u>
Truman	160 ft	14,400 ADT, clean, curbed
Locust	45 ft	1500 ADT, clean, curbed
Parking lot	150 ft	unpaved, 0.2 acres, 30 cars

Air quality data -

<u>Year</u>	<u>Annual geometric mean, ug/m³</u>	<u>No. of samples</u>
1976	105	47
1975	100	36
1974	82	22
1973	-	-



One mile radius around 1517 Locust Street site.



Scale 1" = 400'

- | | |
|--|--------------------------------------|
| 1. Unpaved lot, 0.2 acres, 40 cars | 6. Unpaved lot, 2.3 acres, 350 cars |
| 2. Unpaved lot, 0.2 acres, 20 cars | 7. Storage, 0.1 acres |
| 3. Unpaved lot, 0.2 acres, 30 cars | 8. Unpaved lot, 0.1 acres, 20 cars |
| 4. Construction area, 3.8 acres, 1977-1978 | 9. Unpaved lot, 0.2 acres, 50 cars |
| 5. Exposed area, 0.3 acres | 10. Unpaved lot, 0.5 acres, 100 cars |
| | 11. Unpaved lot, 1.2 acres, 250 cars |

One-quarter mile radius around 1517 Locust Street site.



Viewed to the north.



Viewed to the south.

Sampler at 1517 Locust Street.

POINT SOURCE SUMMARY

Site: 1517 Locust Street

Plant number	Emission level, t/yr	Distance from site, mi	Compass direction,°
11	28	.88	320
10	737	1.2	350
12	65	1.9	230
7	814	2.1	5
33	88	2.1	300
9	46	2.2	32
8	15	2.2	28
34	245	2.6	315
45	50	2.6	225
5	98	3.0	15
3	758	3.1	355
32	449	3.2	335
2	757	3.3	355
4	104	3.4	15
6	104	3.5	18
13	341	3.5	55
44	40	3.6	250
31	282	3.7	325
30	1,030	3.7	327
42	65	3.9	262
41	89	3.9	265
43	785	4.0	260
39	72	4.1	260
29	1,559	4.2	330
15	41	4.3	65
40	43	4.3	268
22	1,233	4.3	80
14	327	4.4	60
23	43	4.5	90
16	249	4.6	70
25	893	4.7	105
24	98	4.7	95
26	48	4.7	130
28	38	4.8	225
38	107	5.0	260
27	891	5.0	320

AREA SOURCE SUMMARY

Site: 1517 Locust Street

Source category	Activity rate	Emissions by sector, ton/yr									
		1	2	3	4	5	6	7	8	9	Total
COMBUSTION:											
Residential fuel	13201 pop	0.2	0.2	0.2	0.2	0.2	0.7	0.7	0.7	0.7	3.8
Comm/Ind fuel	102172 emp	6.3	4.9	4.9	4.9	4.9	19.7	19.7	19.7	19.7	104.7
Incinerators	1						0.4	0.4			0.4
Rail/Air								0.5	1.1		1.6
Auto exhaust	201.0x10 ⁶ VMT	10.6	15.9	1.3	1.3	6.6	37.2	6.6	22.6	30.6	132.7
INDUS PROCESSES:											
Ind processes											
FUGITIVE DUST:											
Railroad yards	30 ac							1.0	2.0		3.0
Clean streets	201.0x10 ⁶ VMT	60.2	90.4	7.5	7.5	37.7	210.9	37.7	128.0	173.2	753.1
Comm streets											
Unpaved roads											
Cleared areas	0.3 ac	neg									
Construction	22 ac		7.5					10.5	14.5	5.6	38.1
Agriculture											
Storage areas	0.1 ac	neg									
Unpaved pkg lots	10.7 ac	9.8						5.7			15.5

Recap	Emissions by sector, t/yr			
	1	2-5	6-9	Total
COMBUSTION	17.1	45.5	180.6	243.2
IND PROCESSES				
FUGITIVE DUST	70.0	150.6	589.1	809.7
Total	87.1	196.1	769.7	1052.9

APPENDIX A

LISTING OF POINT SOURCES IN THE
KANSAS CITY AQCR

Table A-1. LISTING OF POINT SOURCES IN THE KANSAS CITY AQCR

No.	Name	State	County	AQCR ID#	Emission, tpy	Stack ht, ft	UTM Coord		SCC
							x	y	
1	Independence P&L	26	2240	094 0050	107	152	385.3	4327.6	10100201
					95	250			10100201
2	Tabor Milling	26	1020	094 0004	757	134	363.4	4333.5	30200601
3	Conagra	26	1020	094 0015	758	100	363.3	4333.4	30200601
4	ADM Dryer	26	1020	094 0009	10	150	365.1	4333.6	30200604
					94	50			30200601
5	Checkerboard	26	1020	094 0001	73	109	364.8	4332.7	30200601
					26	150			30200699
6	International Multifoods	26	1020	094 0003	104	120	365.3	4333.7	30200703
7	CPC International	26	1020	094 0002	814	110	364.1	4331.5	30201401
8	KCPL, Northeast	26	1020	094 0023	17	153	365.3	4331.4	10100401
					8	156			10100601
9	Ralston Purina	26	2240	094 0036	34	100	365.6	4331.3	30200899
					12	226			30200899
10	KCPL, Grand	26	2240	094 0021	166	114	363.5	4330.2	10100201
					571	240			10100204
11	Folgers	26	2240	094 0017	28	150	362.8	4329.4	30200301
12	Seaboard Allied Mill	26	2240	094 a	65	50	361.3	4326.3	30200699
13	Continental Grain	26	2240	094 0015	341	30	368.3	4331.4	30200699
14	KC Terminal Elevator	26	2240	094 0026	327	50	369.7	4331.8	30200699
15	Bartlett Grain	26	2240	094 0055	17	30	369.7	4331.4	30200699
					24	150			30200699
16	KC Sludge Incinerator	26	2240	094 0039	249	200	370.6	4330.9	50100101
17	KCPL, Hawthorne	26	2240	094 0022	54	200	372.3	4331.9	10100601
					27702	200			10100202
					16704	600			10100202
18	Amoco Oil	26	2240	094 0002	46	170	374.5	4330.5	30600101
					733	200			30600101
					88	150			30600104
					195	120			10200401

a No listing for this source in NEDS.

Table A-1 (continued). LISTING OF POINT SOURCES IN THE KANSAS CITY AQCR

No.	Name	State	County	AQCR ID#	Emission, tpy	Stack ht,ft	UTM Coord		SCC
							x	y	
19	Mo. Portland Cement	26	2240	094 0030	909 146 226	203 50 20	377.5	4333.0	30500601 30500602 30500699
20	City Wide Asphalt	26	2240	094 0061	16 60	40 30	380.1	4333.0	30501121 30502007
21	Aurok Material	26	2240	094 0048	185	25	380.1	4332.4	30500299
22	Armco Steel	26	2240	094 0004	1128 105	81 60	370.5	4329.6	30400701 30400704
23	GAF	26	2240	094 0018	43	55	370.9	4328.2	30500199
24	Albers Milling	26	2240	094 0001	98	55	371.1	4327.5	30200501
25	Centropolis Crusher	26	2240	094 0009	63	25	370.9	4326.3	30502001
26	Clay & Bailey	26	2240	094 0012	30	30	369.4	4323.4	30502007
27	Quindaro P/P	17	3840	094 0048	48 41 350	47 350 350	358.3	4334.5	30903099 10100203 10100202
28	Far-mar-co	17	3840	094 0023	38	30	359.2	4334.5	30200503
29	Owens Corning	17	3840	094 0010	373 962	80 80	360.5	4334.3	30501204 30501204
30	CertainTeed #7	17	3840	094 0001	90 72 62	80 80 80			30501204 30501204 30501204
31	CertainTeed #5	17	3840	094 0045	570 460 173	65 48 28	360.4	4333.5	30501201 30501204 30501205
32	Phillips Petroleum	17	3840	094 0022	109 129 300	35 160 150	361.5	4332.7	30501299 30600201 30600103
33	Bartlett Grain	17	3840	094 0040	20 74 14	100 50 150	360.6	4331.1	30600104 30200502 30200503

Table A-1 (continued). LISTING OF PONT SOURCES IN THE KANSAS CITY AQCR

No.	Name	State	County	AQCR ID#	Emission, tpy	Stack ht, ft	UTM Coord		SCC
							x	y	
34	S-G Metals	17	3840	094 a	5	30	360.4	4329.8	30400199
					0	100			30400199
					200	100			30400103
35	Thompson Strauss Quarries	17	3840	094 a	55	30	350.8	4326.2	30502001
36	Stewart Sand & Material	17	3840	094 0026	26	40	351.7	4327.6	30502501
37	Cargill, Incorporated	17	3840	094 0042	24	50	354.1	4327.4	30200504
					437	50			30200503
38	Fairbanks Morse	17	3840	094 0047	54	150	355.6	4327.4	30400301
					53	150			39000899
39	Proctor & Gamble	17	3840	094 0011	49	200	357.0	4327.6	30100901
					7	70			30100999
					16	60			30100999
40	Standard Milling	17	3840	094 a	43	50	357.3	4327.8	30200799
41	Salina Terminal Elevator	17	3840	094 0019	89	50	357.3	4327.9	30200601
42	Seaboard Allied Milling	17	3840	094 a	65	50	361.3	4326.3	30200601
43	Kaw P/P	17	3840	094 0049	367	208	357.2	4327.5	10100201
					406	205			10100203
					12	205			10100601
44	Tobin Construction	17	3840	094 a	40	40	358.1	4326.5	30500201
45	Bunge Corporation	17	3840	094 0041	50	50	360.5	4325.5	30200502
46	St. Joseph L&P	26	0520	094 0003	576	151	341.0	4403.3	10100204
					94	150			10100204
47	Quaker Oats	26	0520	094 0016	5	92			10100401
48	Carnation Company	26	0520	094 0017	498	40	341.7	4402.4	30200799
49	Far-mar-co	26	0520	094 0018	189	65	338.5	4398.5	30200604
50	Ralston Purina	26	0520	094 0019	333	50	339.5	4398.9	30200699
51	Pillsbury	26	0520	094 0022	143	160	343.9	3997.5	30200799
52	Allied Mills	26	0520	094 0022	172	50	341.5	4401.1	30200504
		17	0840	095 0003	66	50	339.0	4402.1	30200501
					74	50			30200502
					184	100			30200503
					18	50			30200899

a No listing for this source in NEDS.

Table A-1 (continued). LISTING OF POINT SOURCES IN THE KANSAS CITY AQCR

No.	Name	State	County	AQCR ID#	Emission, tpy	Stack ht, ft	UTM Coord		SCC
							x	y	
53	Mo-Kan Paving	17	0840	095 0006	44	40	338.0	4402.5	30500201
					250	40			30500202
54	Deitz Hill Development	17	1760	094 0004	20	30	339.0	4300.6	30502001
					60	30			30502002
					80	30			30502006
					14	30			30502007
55	Delco-Remy Division	17	1760	094 0011	41	44	341.7	4303.8	30400599
56	Holland Quarries	17	1760	094 0016	15	30	345.2	4312.0	30502001
					25	30			30502002
57	Farmers Co-op	17	1760	094 0018	100	100	325.5	4292.0	30200601
					30	50			30200602
					22	50			30200604
58	Kansas State Penitentiary	17	2000	094 0001	31	100	336.7	4346.2	10200401
59	Bay State Milling	17	2000	094 0002	79	100	334.8	4353.4	30200501
					30	50			30200730
					53	50			30200899
60	Wolcott & Lincoln	17	2000	094 0007	64	100	335.4	4354.6	30200601
					19	50			30200602
61	Hamm Asphalt	17	2000	094 0006	753	10	337.2	4347.0	30500202
62	Dooley & Company	17	2000	094 0003	105	50	336.0	4345.6	30200101
63	Beyer Crushed Rock	26	2240	094 0006	252	30	366.4	4313.6	30502007
64	Bendix Corporation	26	2240	094 0005	32	50	364.0	4313.0	10300401
					18	50			10300601
65	Union Quarries	17	1760	094 0012	102	30	345.4	4313.6	30502005
					34	30			30502006
					35	30			30502002

APPENDIX B

DEVELOPMENT OF EMISSION FACTORS

RAILROAD YARDS

Most of the emissions in train yards appear to be from wind erosion rather than from train movement. Therefore, an adaptation of the U.S. Department of Agriculture's wind erosion equation was used as the basis for deriving emission factors for railroad yards. The modified equation estimates annual suspended particulate emissions due to wind erosion from exposed soil surfaces:⁸

$$E = a I K C L' V' \quad (\text{eq.1})$$

where E = emission factor, ton/acre/yr

a = portion of total wind erosion losses that would be measured as suspended particulate, estimated to be 0.025

I = soil erodibility, ton/acre/yr

K = surface roughness factor

C = climatic factor

L' = unsheltered field width factor

V' = vegetative cover factor

In this equation, K, C, L', and V' are all dimensionless. An average erodibility (I) of 56 ton/acre/yr was assumed to be applicable for the soil in the railroad yards. The area around railroad yards generally has a fairly smooth surface which is equivalent to a K value of 1.0. The climatic factor for the Kansas City area is 0.10. An average width of 1000 ft was assumed for railroad yards, since this is not a critical variable in the equation. The L' value equivalent to L = 1000 ft was determined from a nomograph in which soil type is also a variable--0.64. There is no vegetation in rail yards so V = 0 and V' = 1.0. Also, these areas are generally treated with oil or chemicals to reduce

dust and weed problems. Therefore, the emissions have been estimated with the above values and the following assumptions:

- ° no vegetation
- ° sandy soil (I = 56)
- ° half the area is stabilized, with an emission rate of 20 percent of the unstabilized area
- ° train traffic increases the wind erosion emissions by 20 percent

Therefore, the resulting emission factor is:

$$E = (0.025)(56)(1.0)(0.1)(0.85)(1.0)\left(\frac{1 + 0.2}{2}\right)(1.2) \\ = 0.1 \text{ ton/acre/yr}$$

REENTRAINED DUST FROM PAVED STREETS

The most recent emission factors for estimating emissions from paved roads were obtained from a draft of AP-42. The recommended emission factors are 5.0 gm/VMT for clean streets and 20 gm/VMT for commercial streets. These factors include an exhaust emission factor and are not corrected for days with rain.

Based on regional estimates for the percentage of heavy duty gasoline and diesel trucks, an exhaust emission factor of 0.6 gm/VMT was calculated from published emission factor data.⁷ This factor was subtracted from the paved road emission factors and the resulting values were corrected for rainfall.

Rainfall data available for 1974 indicate that there were 86 days with at least 0.01 inch of rain. Based on this information, the reentrained dust emission factors were

reduced by approximately 24 percent. The corrected emission factors are: 3.4 gm/VMT for clean streets and 14.8 gm/VMT for commercial streets.

UNPAVED ROADS

Many different groups have investigated emissions from unpaved roads. All the studies show emission rates usually in the range of one to 20 lb/VMT, and show that the rate is highly dependent on vehicle speed. After reviewing these studies, EPA selected the following emission factor for publication in AP-42:⁹

$$E = (0.6)(0.81)(s)(S/30)\left(\frac{365 - w}{365}\right) \quad (\text{eq.2})$$

where E = emission factor, lb/VMT

0.6 = fraction of total particulate
less than 30 u diameter

s = percent silt of road surface
material

S = average vehicle speed, mph

w = mean annual number of days with
0.01 inch or more of rainfall

The percent silt on gravel road surfaces is about 12 percent based on data presented in the EPA publication, Development of Emission Factors for Fugitive Dust Sources.⁸ For graded and drained road surfaces, no aggregate material is applied to the roadbed so it is composed of compacted native soil. The fine material originally on the surface is probably rapidly removed by turbulence from passing vehicles or by wind and water erosion forces. The remaining stable surface is composed of sand- and pebble-sized particles, with dust being generated primarily by the continuing mechanical breakdown of these particles as a result of traffic.

It is assumed that the percent of silt-sized particles on a seasoned dirt road surface is approximately the same as that for gravel, or 12 percent. The number of days with 0.01 inch or more of rainfall is 86. Assuming a vehicle speed of 20 mph, the average emission factor is 3.0 lb/VMT.

CLEARED OR EXPOSED AREAS

The modified wind erosion equation described earlier was used for estimating emissions from cleared or exposed areas. An average erodibility (I) of 38 ton/acre/yr was assumed for the soil types common to this area. The cleared areas are generally left with a fairly smooth surface, which is equivalent to a K value of 1.0. The climatic factor for the Kansas City area is 0.10. An average field width of 1000 ft was assumed for all the cleared areas, since this is not a critical variable in the equation. The L' value equivalent to L = 1000 ft was determined from a nomograph in which soil type is also a variable--0.64. There is no vegetation on cleared areas, so V = 0 and V' = 1.0.

Based on these input data, the average emission rate from cleared areas would be 0.06 ton/acre/yr.

CONSTRUCTION

The emission factor presented in AP-42 of 1.2 ton/acre/mo was corrected for the climatic conditions in Kansas City by use of the equation:⁹

$$E = \frac{1.2}{(PE/50)^2} \quad (\text{eq.3})$$

where PE = 95 for Kansas City

$$E = 0.33 \text{ ton/acre/mo}$$

This value is appropriate for residential and commercial construction with excavation and regrading, and includes the effect on emission reduction of moderate watering of the site.

AGRICULTURE

Total emissions from agriculture are calculated from the sum of tilling and wind erosion emissions. The factor for tilling from AP-42 is:⁹

$$E = (0.8)(1.4)s/(PE/50)^2 \quad (\text{eq.4})$$

where E = emission factor, lb/acre/run

0.8 = fraction of total particulate less
than 30 μ diameter

s = percent silt in surface soil

PE = precipitation-evaporation index

An average of three tilling operations per year is assumed, and a silt content of 40 percent. Therefore, total tilling losses are 37.2 lb/acre.

The modified wind erosion equation described earlier is recommended for determining the wind erosion component of agricultural emissions. All variables in the equation except C are dependent on either the soil type or crop grown on each field. However, this component is lower in magnitude than tilling losses in the Kansas City area, so the following average values were assumed:

$$I = 47$$

$$K = 0.6$$

$$C = 0.1$$

$$L = 2000 \text{ ft}, L' = 0.73$$

$$V = 500 \text{ lb/acre}, V' = 0.14$$

$$E = 0.007$$

Therefore, the combined agricultural losses are 0.026 ton/acre/yr.

AGGREGATE STORAGE AREAS

The emission factor for this source category was based on sampling performed in the Kansas City and Cincinnati areas. The emission factor (E) is:⁸

$$E = 13.2 \text{ lb/acre/day}$$

Assuming activity for six days a week, the annual emission factor is:

$$E = 2.1 \text{ ton/acre/yr}$$

UNPAVED PARKING LOTS

If the average number of vehicles using a parking lot daily and the average distance of travel in the lot can be estimated, these data can be converted to VMT/yr and then multiplied by the emission factor for unpaved roads to determine unpaved parking lot emissions. With an average speed of 10 mph in the parking lots, the emission factor is 1.5 lb/VMT. Usage of most lots for only five days per week was assumed in calculating annual VMT.

UNPAVED STORAGE AREAS

No factor was found for this source category. By comparison with other source categories, it was estimated that emissions per acre from this source were greater than for a cleared area (0.06 ton/acre/yr) or railroad yards (0.1), but not nearly as high as aggregate storage (2.1) or construction (4.0). A value of 0.2 ton/acre/yr was used for this minor source category.

GRAIN ELEVATORS

A value of 1.80 ton/silo/yr was developed from file data for a previous PEDCo study of particulate air quality in rural Kansas and Nebraska.¹ This same value was applied here for sources for which NEDS data were not available.

INCINERATORS

The emission factor for multiple chamber industrial/commercial incinerators from AP-42 was used in this inventory.⁹ That value is 7.0 lb/ton of refuse incinerated.

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